COTTON

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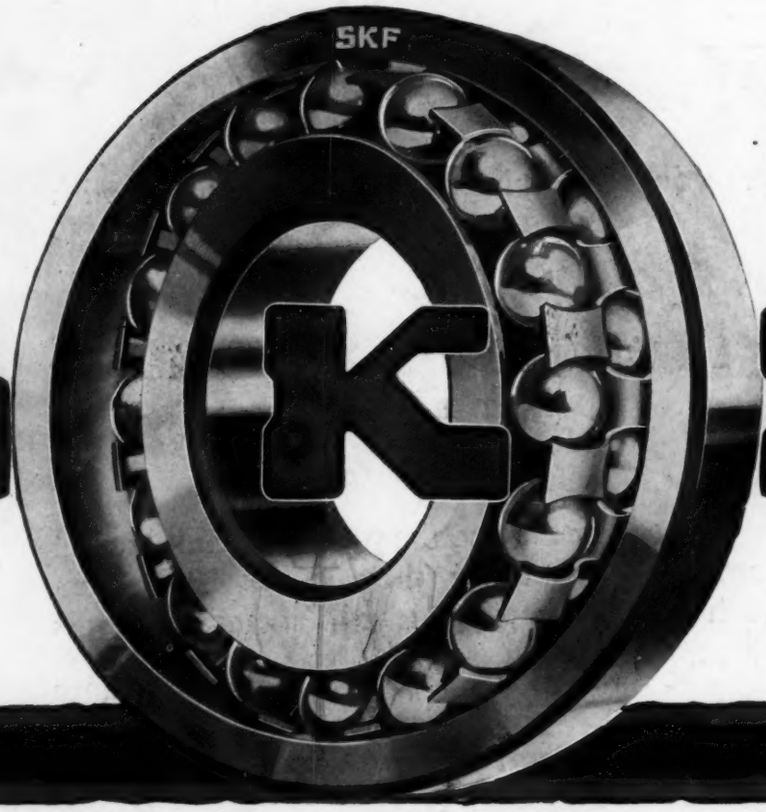
BUREAU OF COMMERCE
TRANSPORTATION DIVISION

SKF



SKF

THE assurance of long life and efficient operation is carried with SKF Ball Bearing equipped Machinery. You cannot make a mistake in the selection of a Ball Bearing if you look for the mark SKF.

SKF BALL BEARING CO.

HARTFORD, CONN.

Old Looms for New

NOW

is the time for replacing Common looms with

Northrop Looms

Trade-Mark

Whatever may be the profits of mills having Common looms today they would have been much greater if equipped with Northrop Looms

The mill having Common looms that does not lay aside a part of its war profits to provide a Northrop Loom equipment is failing in its duties to its Stockholders

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

SOUTHERN OFFICE
188 SOUTH FORSYTH STREET ATLANTA GEORGIA

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COTTON

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When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

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A SUGGESTION FOR COMPANIES WITH GERMAN NAMES.

There is sure to be a revulsion of feeling against German made products as we suffer more from the war. The feeling is noticeable now, but it is mostly on the surface and has not penetrated far into our individual, commercial or national systems.

A German name is no evidence of disloyalty. Some of the best men in the service of the country are carrying names far from being strictly American. As the feeling against our enemy increases this fact will be lost to many. To counteract the influences of this tendency, to insure against loss of business due to any feeling that may arise, for those companies bearing names indicating German origin—there is a remedy. Advertising.

Advertising is the door through which these good Americans can go with perfect assurance that they will place their story before the proper tribunal. Advertising stands ready to carry the message of the responsibility of any manufacturer who can bare the facts without fear.

No American wants to harm any other American. The spirit of cooperation is strong during these times of stress. The helping hand is reaching out in every direction. But how is a man or company to know? If a name sounds suspicious the first inclination is to play safe and buy elsewhere.

COTTON, the dominating monthly cotton textile magazine, reaches the dominating men in the cotton textile industry.

Use advertising to be time thrifty and war thrifty.

Don't stop advertising. War time is no time to stop anything except wasted time. Advertising has uses it never had before. Look into its new and special uses for yourself.

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LIFE INSURANCE.

How much life insurance do you carry? Sounds personal doesn't it? However there is a direct bearing between your life insurance and your business.

Your life insurance is carried to protect some one or something from disaster and want in case your personal protection is removed. The amount of insurance you carry bears some relation to your income.

The business life of any organization can be insured by advertising. And right now is the time to insure for business after the world war is over. Changes are bound to occur in our commercial life. Advertising now, advertising of the right kind will insure your company of the smallest amount of confusion when adjustments are being made to the new conditions.

Advertising in COTTON will insure your business for the after-war changes no matter what they may be.

WHAT WE MEAN BY SERVICE.

A sales manager was making his first trip through the South recently. He was not familiar with the country—did not know what route to take in order to feel the pulse of conditions. The trip he had outlined would have taken all the time he had to devote to this work and his results would not have been conclusive.

He dropped into the office of COTTON and in talking this matter over we were able to outline a route whereby in the same length of time he touched more than twice the number of manufacturing centers in the length of time that he had planned for his first route.

This is one of the ways that COTTON can help advertisers get business from this territory. There are other ways which you may not know of. Why not ask a few questions?

The Cost of Slipping Belts

in dollars and cents due to wasted power is considerable. Then there is the additional expense of renewing belting that is prematurely worn out. Slipping dries out a belt, decreases its clinging powers and pliability and shortens its life.

DIXON'S SOLID BELT DRESSING

keeps belts healthy and efficient. It's good for what ails 'em.

Write for a free sample and booklet 34-O.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827.

JORDAN MANUFACTURING CO.

BOBBIN MAKERS

Home Office and Plant No. 1

MONTICELLO, GEORGIA.

THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART

Philadelphia Textile School

Prepares Young Men for PRESENT and AFTER-WAR CONDITIONS

Young men who have reached 18 years of age may enroll for a thorough Course of Textile training, availing themselves of the renowned corps of instructors and mechanical equipment.

Courses of instruction include all branches of Textile Manufacture.

Textile Chemistry and Dyeing

COTTON, WOOL, WORSTED, SILK

THIRTY-FIFTH SEASON opens September 23d, 1918. Entrance Examinations, Thursday, September 19, 1918.

Illustrated circular sent on application to

E. W. FRANCE, Director

Broad and Pine Streets, Philadelphia, Pa.

GARLAND

Another Reason Why *You* Should Buy *GARLAND*

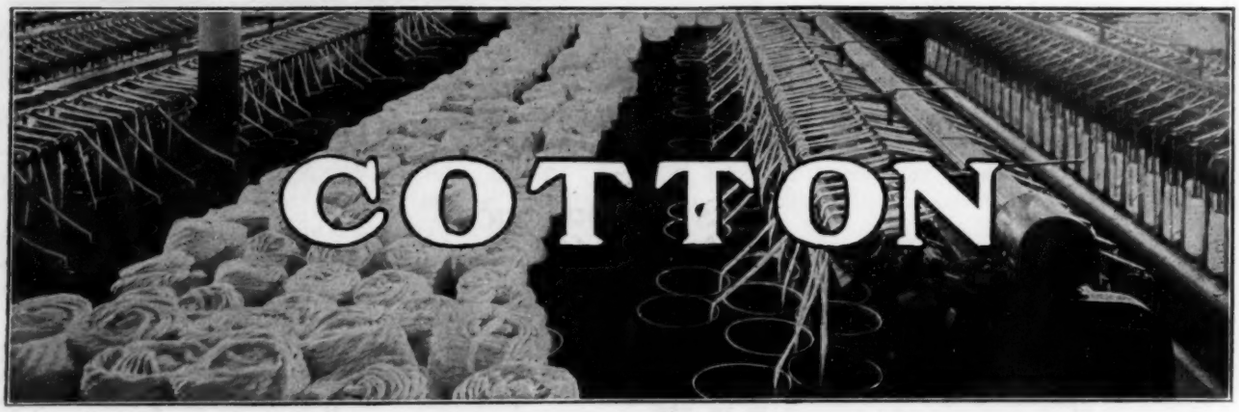
Loom Harnesses

Our loom harnesses are critically inspected not only during the process of manufacturing, but also when ready to ship, when any harness, which is not up to the high standard we require, is thrown out. Every harness which you receive from us is therefore as near perfect as it is possible to make it, and the quality is always the same.

TRADE MARK

GARLAND MFG. CO.

SACO, MAINE



August, Nineteen-Eighteen

Some Suggestions Regarding High Density Compression.

It now looks as if another improvement primarily due to war conditions is to be the better baling and handling of the South's big cotton crop. Men in high governmental positions have at last become really interested in a movement looking toward that end, and what has long been a dream in the minds of a few far-sighted individuals, now bids fair to become a reality in spite of opposition and inertia.

In September of last year COTTON reviewed the situation in cotton transportation from a railroad standpoint and pointed out conclusively that high density compression was not the remedy for the 1917-1918 crop. Proper shipping regulations was the only thing available at that time and a modification of the suggestions of the General Managers Association of the Southeast, representing fifty-seven railroads, was adopted by the cotton carrying roads and shipments of seventy-five bales ordered as a car-load minimum.

This year, with the railways in the hands of the Federal Government, finds the situation almost as serious as one year ago. Some few additional high density attachments have been installed, but the number is still far too limited to make much of an impression on the total crop. Furthermore, as indicated in the September article, to be of much value to the railroad end of the transportation, the high density compresses should be located as closely as possible to the point of origin.

Also in September of last year, a report from the Consul General of London complaining as to the nature of American methods in the baling of cotton was referred to the Storage Committee of the War Industries Board by the State Department—this led to exhaustive studies being made on the subject. In February, 1918, Dr. A. A. Hamerschlag undertook for General Goethals a study of better methods of packing army supplies with a view to conserving ocean shipping space. He devoted much time to cotton and a report was submitted by him to General Goethals on March 28th, in which he pointed out that, in his opinion, a readjustment of freight rates which would provide minimum rates for loading freight cars to their maximum capacity was all that was required to induce high density baleage.

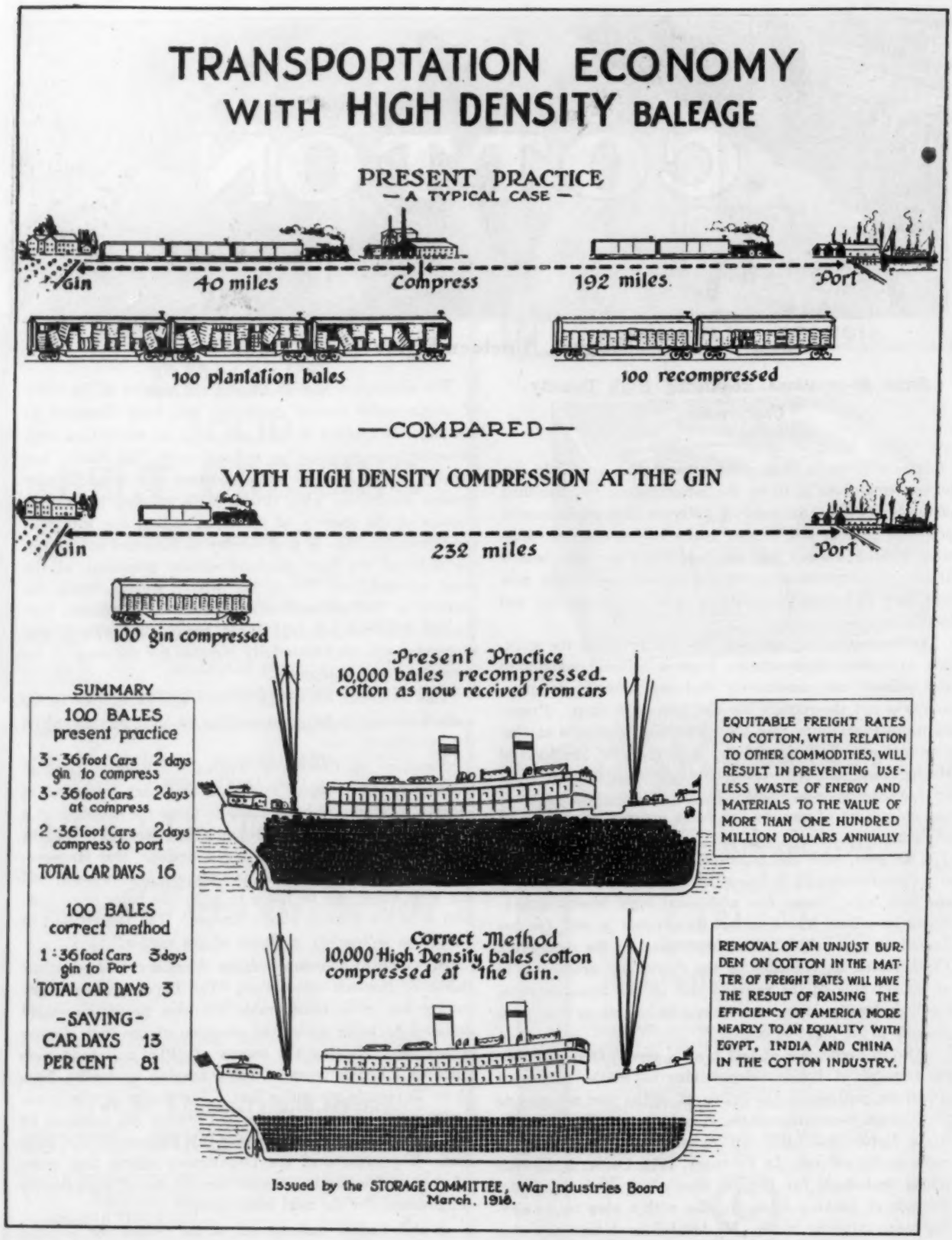
The advantages of high density compression at the point of origin under normal conditions was fully discussed in the pages of COTTON in 1911 and 1912, at which time such economic improvements as reduced costs, less waste, less country damage, storage space and tare were urged. Under present conditions, with British mills running short time because of the scarcity of American cotton, and with railroad transportation in this country so burdened as to keep the mills of the New England section practicaly at the point of shutdown during the winter months, when the scarcity of fuel and raw cotton reaches its maximum, high density gin compression would create tremendous war economies and very materially increase the car days of the present railway equipment.

This economic advantage is very graphically shown by a chart devised by Dr. Hamerschlag which is reproduced on the succeeding page.

Secretary of Commerce William C. Redfield in commenting on this subject said: "I am much interested in the efforts which are being made to cause the adoption of a more compact bale of cotton than is now used. From every point of view this seems to me desirable. Our transportation systems both on land and sea are over-crowded and any step which can be taken to make the bales more compact is in the general public interest. The Department of Commerce is heartily in favor of the matter."

Speaking of the same subject Secretary of Agriculture David F. Houston stated that, "The Department of Agriculture has given considerable attention to the movement designed to bring about the adoption of the high density cotton bale. During the season of 1917, mill tests were made on different types of bales, ranging in density from 15 to 35 pounds per cubic foot. The results of our investigations to date indicate that the fibre is not damaged by the use of the high compression of 35 pounds per cubic foot. The experts of the Department believe that every effort should be made to encourage the use of high density compression for the next cotton crop."

A still further endorsement of the proposition is given by the Chairman of the Shipping Board, Edward N. Hurley, who wrote as follows: "My attention having been called to the efforts being made to bring about the adoption of a more compact bale of cotton than the one which is now offered for overseas and coast-wise shipment, I am pleased to say that from the standpoint of the Shipping


TRANSPORTATION ECONOMY
WITH HIGH DENSITY BALEAGE
PRESENT PRACTICE
— A TYPICAL CASE —
Gin
40 miles
Compress
192 miles
Port
100 plantation bales
100 recompressed
—COMPARED—
WITH HIGH DENSITY COMPRESSION AT THE GIN
Gin
232 miles
Port
100 gin compressed
Present Practice
10,000 bales recompressed.
cotton as now received from cars
SUMMARY
100 BALES
present practice
3 - 36 foot Cars 2 days gin to compress
3 - 36 foot Cars 2 days at compress
2 - 36 foot Cars 2 days compress to port
TOTAL CAR DAYS 16
100 BALES
correct method
1 - 36 foot Cars 3 days gin to Port
TOTAL CAR DAYS 3
-SAVING-
CAR DAYS 13
PER CENT 81
EQUITABLE FREIGHT RATES ON COTTON, WITH RELATION TO OTHER COMMODITIES, WILL RESULT IN PREVENTING USELESS WASTE OF ENERGY AND MATERIALS TO THE VALUE OF MORE THAN ONE HUNDRED MILLION DOLLARS ANNUALLY
Correct Method
10,000 High Density bales cotton
compressed at the Gin.
REMOVAL OF AN UNJUST BURDEN ON COTTON IN THE MATTER OF FREIGHT RATES WILL HAVE THE RESULT OF RAISING THE EFFICIENCY OF AMERICA MORE NEARLY TO AN EQUALITY WITH EGYPT, INDIA AND CHINA IN THE COTTON INDUSTRY.
Issued by the STORAGE COMMITTEE, War Industries Board
March, 1918.

Board, having in mind the imperative necessity of conserving space to the utmost, we are heartily in favor of the movement and are anxious to be put on record as supporting it."

The recommendations made by Dr. Hamerschlag in his report to General Goethals were as follows:

"1. To go into effect in thirty days:

"Cotton will only be received for Overseas and Coastwise shipment in bales that have an average density of not less than thirty-three (33) pounds per cubic foot.

"This order should be issued because of the limited cargo space now available for war material.

"2. To go into effect after September, 1918:

"Priority of shipment for the Inland Transportation of cotton to *Interstate Points* will be given to freight cars loaded with not less than one hundred (100) bales and a total weight of fifty thousand (50,000) pounds to a thirty-six (36) foot freight box car. Separate bills of lading should cover each car shipment in order to avoid delay in unloading. This requirement is particularly important for cotton destined for the ports.

"The necessity for this order is apparent in view of the limited equipment now available for transportation purposes and to relieve the congestion in other parts of the country due to the shortage of cars and motive power.

"*Ocean Transportation.*—The cargo space necessary to transport American Cotton overseas far exceeds the space which ought to be used for this purpose. Expert stevedores estimate that it requires for every ton of cotton over one hundred (100) cubic feet to stow it in the ships. If cotton were baled at the density of the Chinese, Indian and Egyptian bale, thirty (30) per cent of the shipping space now used would be available for War Commodities or for additional cotton shipments. Over four million bales of cotton were exported this year despite the shortage in the overseas service; this required over a million cargo tons and a space double the usual ship rating for computing cargo capacity.

"In twenty days in February of this year during the period of greatest ship shortage we exported one hundred sixteen thousand (116,000) bales of cotton. The same space in the ships could have carried nearly forty thousand (40,000) additional higher density bales, or there would have been available over eight thousand (8,000) tons of cargo space for other supplies.

"*Coastwise Transportation.*—The South Atlantic and Gulf Ports are used to transport to the New England spinners on coastwise steamships great quantities of cotton, the average density of which approximate twenty-two and one-half (22½) pounds per cubic foot. If the density were increased ten (10) pounds the available cargo space could be used advantageously, and by that amount would relieve the railroads of heavy, long-haul freight. Mosts of these ports have the equipment with which to increase the density of the bales, but have not done so because of the expense involved.

"*Inland Transportation.*—The railroad movement of the American Cotton crop involves millions of tons, requiring car space out of all proportion to the actual weight of the commodity. The railroad facilities used for this purpose could easily double their effectiveness if better baling methods were introduced and cotton made ready for shipment in smaller bales. At least one-half of the freight car space used in this service and a great deal of railway motive power would be released for other freight if better gin compressing or higher density compression replaced the existing practice.

"*Scarcity of Carriers.*—Since ocean tonnage is at a premium and coast ships equally scarce and the railroad equipment inadequate for our needs, it seems highly important to immediately encourage and exact denser bales; this can only be accomplished by securing the co-operation of all the important cotton interests. To avoid any undue disturbance of the cotton trade, this important industrial economy can only be secured by recognizing that these changes involve additional expense. The cost, however, is comparatively small when the result is so important in saving ocean cargo space amounting to *hundreds of thousands of tons* and freeing for other use *thousands of freight cars* to relieve the congested facilities at other points.

"*Location of Presses.*—Most of the ports and larger terminal centers east of the Mississippi River are already equipped with high density presses capable of compressing many more bales during the year. There are also additional presses located at hundreds of concentrating points in the South which do not make a fair return on their investment. Some of this machinery supplied with high density attachments and moved to more important railroad centers would greatly reduce the use of railroad equipment. Gin compresses to produce the high density bale would easily be the best means of securing the maximum saving in labor, handling and freight space, and the manufacturers of these machines should find their opportunities enhanced by the demand for smaller bales in better condition for transportation.

"*Economies.*—Economy and space saving is dependent not only on the density of the bale, but its conformity to a unit size. Since the standard gin box measures 27 x 54 inches, the finished bale should be in multiple of these figures; this makes possible space saving through stacking in the carriers and in the warehouses.

"Uniform higher density bales will result in these economies; the tare now amounting to six per cent (6%) could be materially reduced; the jute and burlap covering lessened in proportion to the size; the metal straps similarly shortened; the fire hazard reduced; more economical use of warehouse space; the damage from theft and injury in transit conserved.

"*Freight and Cargo Rates.*—To encourage and accelerate better cotton baling methods without retarding the movement of the crop any governmental action should equitably adjust the cost of producing higher density uniform size bales. Preferential rates for a more effective use of cargo and freight car space is one method of reimbursing the cost of condensing the bale of cotton. Furthermore, it will offer a premium on greater density and a reduction in the size of each five hundred pound bale if this preferential rate is based on the reduction of every cubic foot of space saved by better and more efficient methods of wrapping, strapping and baling cotton. To meet the necessity for quick results now essential during the war, it may be necessary for the government to aid in the location at certain ports and railroad centers high density presses to care for the next crop movement."

These suggestions are all good, but particular emphasis should be placed on those paragraphs referring to "Location of Presses" and "Freight and Cargo Rates." Under the prevailing conditions in the cotton growing states it will doubtless be wise and probably necessary to amplify the recommendation in reference to government aid, not only as an emergency measure, but in the installation of co-operative gin compresses at suitable points.

A co-operative gin compress has been in operation in

Mississippi for several years, but suitable financial assistance from governmental sources would doubtless accelerate their more general adoption. Proper co-operation between government and planter, backed by the demands of the manufacturer for reduced tare on domestic bales, could undoubtedly produce much more adequate handling conditions by the time the 1919-1920 crop is ready for harvest.

Thus it is seen that, one by one, the "bugaboos" of gin compression are being cast aside as non-existant. The recognition of freight rate descrimination by the federal investigator is a decided victory for the gin compress. The great shortage of all metal products under present conditions will doubtless prevent any obstructionist tactics on the part of large steel interests, who will be glad to divert some of the product of their hoop mills to other and more lucrative channels. Speedy, convenient and well built compressing machines for this work are now in the market, and even the objection of separate samples on gin compressed bales is now obviated through the aid of a patented British sampling machine, by means of which samples may be taken from any part of the bale, over the whole cross section of the bale, and the bale put back together again without repressing.

Cotton manufacturers, individually as well as through their associations, should express to their congressman their interest in this movement, and by their co-operation help to achieve the day when America will at least equal Egypt, India and China in the proper handling of this wonderful staple.

A Political Subterfuge.

Once every two years members of the national house have to enter the race for re-election. At such times they take to the stump or the cart tail and tell the voters of their district "what we've done." As these accomplishments do not usually amount to very much, there is always an effort made to pass some startling or spectacular measure that does not seem on its face to injure either the farmers or union labor. This measure is then used as the "big gun" by the candidate to make a lot of noise and injure but few active voters.

Such was the measure affecting postal rates and establishing the zone system for second class mail, which was recently sneaked in as a rider on an appropriation bill and jammed through under party pressure. This bill is now being shouted about daily by these candidates for re-election in hundreds of districts as the means of saving forty millions of dollars annually to the people. They carefully avoid the equally salient fact that it is the people who have to pay these forty millions in the end. The only difference between the old and the new is that the person who reads is taxed for his education, unless he desires to secure this education through the medium of the Congressional Record.

Charles Evan Hughes, a former member of the Supreme Court, head of the Hughes Postal Commission which made the latest investigation of the Postal Department, and probably one of the ablest judicial minds in the country today, in a letter dated June 17th, 1918, says:

"I prefer not to accept a retainer to appear before legislative committees upon matters of general policy, as in such matters, if I have anything to say, I desire to speak only as a citizen.

"I have no hesitation in saying that I regard the zone system of postal rates for newspapers and periodicals, coming under the definition of second-class mail matter, as ill advised. The Commission on Second-Class Mail Matter (appointed in 1911), of which I was a member, considered this question and reported unanimously against the zone system. We said in that report:

> "'The policy of zone rates was pursued in the earlier history of our post office and has been given up in favor of a uniform rate in view of the larger interest of the Nation as a whole. It would seem to the Commission to be entirely impracticable to attempt to establish a system of zone rates for second-class matter. * * *
>
> "'Progress in the post office, with respect, both to economy in administration and to public convenience, leads away from a variety of differential charges to uniform rates and broad classifications.'

"In my judgment the zone system for second-class mail matter is unjust to the publisher and unjust to the public. It not only imposes upon the publisher the additional rates upon a sectional basis, but it makes necessary the added expense for the necessary zone classifications at a time when every economy in production and distribution is most important. It introduces a complicated postal system to the inconvenience of the publisher and public when there should be a constant effort towards greater simplicity. There is no more reason for a zone system of rates for newspapers and magazines than for letters.

"Newspapers and magazines are admitted to the second-class postal rates on the well established policy of encouraging the dissemination of intelligence, but a zone system is a barrier to this dissemination. If it is important that newspapers and magazines should be circulated, it is equally important that there should not be sectional divisions to impede their general circulation through the entire country.

"We are proud at this moment of our united purpose, but if we are to continue as a people to cherish united purposes and to maintain our essential unity as a nation, we must foster the influences that promote unity. The greatest of these influences, perhaps, is the spread of intelligence diffused by newspapers and periodical literature. Abuses in connection with second-class mail matter will not be cured by a zone system of rates. That will hurt the good no less than the bad, and perhaps some of the best sort of periodical literature will be hit the hardest.

"We do not wish to promote sectionalism, and 'one country' means that in our correspondence and in the diffusion of necessary intelligence we should have a uniform postal rate for the entire country. The widest and freest interchange is the soundest public policy.

"I hope that Congress will repeal the provision for the zone system which is decidedly a looking-backward and walking-backward measure."

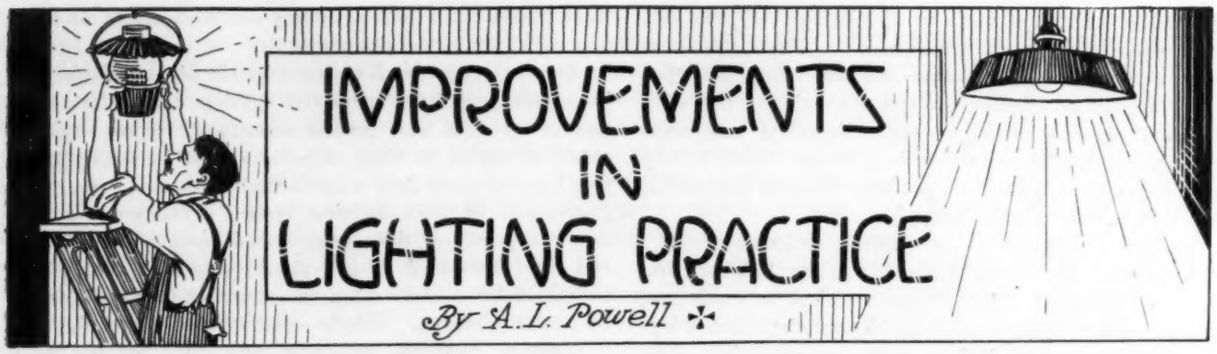
Readers should act at once on this matter and write immediately and strongly to their congressman and senators urging the prompt repeal of this unfair postal "zone" law.

Textile Trade of Chile.

American textiles are much better known and liked in Chile now than they were before the war. To keep the advantage, our manufacturers and exporters must carefully study the market conditions. The Department of Commerce has just completed a report that contains exactly the sort of general and specific information needed.

It is the work of Special Agent W. A. Tucker, who recently finished his investigation in Chile. There are chapters on the general conditions affecting the trade in textiles, and considerable attention is devoted to details of the trade in cotton goods, woolen goods, silks, linen, and jute and hemp goods.

When you buy War Savings Stamps you do not give your money, you loan it at 4 per cent. compounded quarterly. You help your Government, but you help yourself even more.



INTRODUCTORY.

In the latter part of the 19th century electricity was introduced in the mill, both for power and light. Prior to 1890, very little overtime work or work during the dark hours was attempted in the mills because of inadequate illumination. Early lighting was by means of the tallow candle which was later superseded by the kerosene lamp and the open flame gas burner. About 1890 the carbon incandescent lamp and the carbon arc lamp were introduced. The improvements in the electrical unit paralleled the improvements made on the machines used in the manufacture of cloth. A few years ago the automatic loom was perfected, and also the Mazda lamp was developed to its present high state of perfection.

With the introduction of efficient lamps and reflectiig devices, the mill managers began to give considerable attention to the question of artificial lighting, Tremendous strides of advance were made, and in the last ten years lighting has been completely revolutionized. Much higher standards are the practice, and these have been attended by great economic gains in mill operation. The value of correct illumination has been completely demonstrated and the future looks very bright.

Lighting is destined to assume an even greater importance as the cost of labor and materials increases and competition becomes keener. It may even become a deciding factor between profit and loss. Lighting is not a necessary expense to be minimized, but is a most important aid in the economic production of cloth.

A Poorly Lighted Room.

Fig. 1. Could the maximum production be attained under lighting conditions such as here pictured? Drop lamps hang low over each table, giving a circle of very brilliant illumination surrounded by relatively darker areas. At the rear of the room will be seen a brilliant lamp without a reflector to shield the eye fromits glare. The place appears untidy and employees are likely to becomes slovenly under such conditions.

There has been a recent agitation on the subject of "lighting curtailment" brought about through the coal shortage of the past winter. This situation will probably recur this year, and it will be necessary to effect the utmost economy. On the other hand, it is not likely that the Fuel Administration will recommend decreasing industrial lighting. It is the universal opinion, already expressed, that in general the intensity of illumination in industrial plants should be increased rather than diminished. This position is taken with due regard for the coal shortage, for those who analyze the questions know that *proper lighting is absolutely essential to maximum production.* Don't make

*Mr. A. L. Powell, the author of this series of articles, has specialized during the last seven years in industrial and commercial lighting methods and equipment. He is connected with the illuminating engineering department of the Edison Lamp Works of the General Electric Co., being associated with G. H. Stickney, illuminating engineer and assistant sales manager for this company. Mr. Powell has carried on several important investigations and has written many instructive articles on lighting practice. He is active in the Illuminating Engineering Society and is a graduate electrical engineer from Columbia University in the class of 1910. Mr. Powell is generally recognized as a leading authority on American industrial lighting conditions.

the mistake of cutting down on the lighting in your mill. Such action is ill-advised and dangerous. Make the necessary saving by using the most efficient lamps equipped with reflectors to effectively direct the light on the work and shield the eyes of the worker. Discard at once wherever possible inefficient carbon drop lamps, which require three times more power to produce a given amount of light than modern Mazda lamps.

ARTIFICIAL LIGHTING AS AN ELEMENT OF PRODUCTION.

Experience has proven that with proper lighting, production is increased. This statement might be challenged by some reader, so let us consider the question from a logical viewpoint. If we had no means of supplying artificial light, then as soon as the sun had set—very early in the northern latitudes in winter—the plant must cease working. Night shifts would, of course, be out of the question. On overcast and stormy days it might be possible to run the mill, but the strain of trying to see in the low intensity of light would be so great that the employees would be completely fatigued in a short while. A few days of such abuse of the eyes would permanently injure them.

Fortunately, however, there are a number of artificial lighting systems available, so that there is today probably no building without lighting equipment of some sort. The question remains whether the illuminant is of the proper character and entirely adequate. Will an improved arrangement and higher intensity—in other words, the best lighting—increase the production over that secured under just light enough for the safe operation of machines? This is a subject on which it is difficult to get definite concrete data. Every plant manager knows how many factors contribute to affect production, and that it is almost impossible to differentiate between them. A number of tests have been proposed in an attempt to determine the relation of light to output. It is planned to equip typical shops and mills with a given lighting system, producing a certain intensity or amount of light on the work. The factory will operate under these conditions for a period. Then the intensity will be doubled, or trebled, and the same period allowed to elapse. A return will be made to the original lighting, and then again to the higher intensity. In this manner it is hoped to eliminate most of the other variables.

It can be readily seen that such a determination is tedious and lengthy, nevertheless, the Commonwealth Edison Company, of Chicago, report the completion of one test along these lines. In a machine shop of one of the large Chicago concerns a lighting system, using incandescent lamps in deep bowl steel reflectors, was carefully designed to provide four foot candles of illumination at the work. The men worked under these conditions for a period. Then the intensity was increased to 12 foot candles; in other words, the lighting was trebled. This change was attended by an 8 to 27 per cent increase in production. These figures cover eight different operations, which averaged a 15 per cent increase. Every precaution was taken to insure fair results.

Stop a moment to think of this figure—an average increase of 15 per cent in output as a result of an extremely small actual increase in operating expense. It is true that this is only one instance, but, on the other hand, the initial intensity (four foot candles) is ordinarily considered good lighting. What tremendous increases are possible in those plants which now have only one foot candle, or even less illumination, on the work!

Sometime ago the National Electric Light Association, in compiling data on industrial lighting, sent letters to a number of mills and general manufacturing concerns to obtain a record of their experience with better lighting. One hundred sixty-four manufacturers reported recent improvements in their lighting system. Thirty-one stated that the quality of their product had become much better, and sixty attributed an increase in output to the change in illumination. Only seven reported that they could trace no results whatever. This is certainly a good record.

Judging from the foregoing data, good lighting does increase production. The next question in our analysis of the subject is—Why?

No matter how efficient our machinery may be, the production depends on the combination of the machine and operator. If we increase the efficiency of the operator a certain amount, the efficiency of the combination will be increased. If the lighting is poor or inadequate, the workman will be less efficient during those hours when dependance cannot be had on natural light. He has become accustomed to daylight intensities, and if when the artificial system is turned on the intensity is low in comparison, his movements must slow up. He must be more cautious, for he has not the confidence which comes with clear vision. He will waste time trying to see his work under the poor lighting. If the artificial lighting is of a type which is under his control (drop lamps), considerable time may be spent in adjusting it to suit his whim. If brilliant light sources are in the field of view, his eyes are strained, headache results, and the bodily efficiency is seriously depleted. It is quite obvious that all these items combine to decrease production.

On the other hand, if the illumination is adequate, and of a proper quality, the workman proceeds at his normal speed and scarcely notices the effect of the diminution of daylight.

In the textile mill, in particular, a delay in a single process may limit the entire output of the mill at a critical time. These delays are, therefore, extremely costly, and the relatively small expenditure for proper lighting is ridiculously low in comparison with the possible loss.

ECONOMICS OF LIGHTING.

It is believed that the previous paragraphs have proven that good lighting does increase production. Now, what does a greater output per day or year mean to the plant owner?

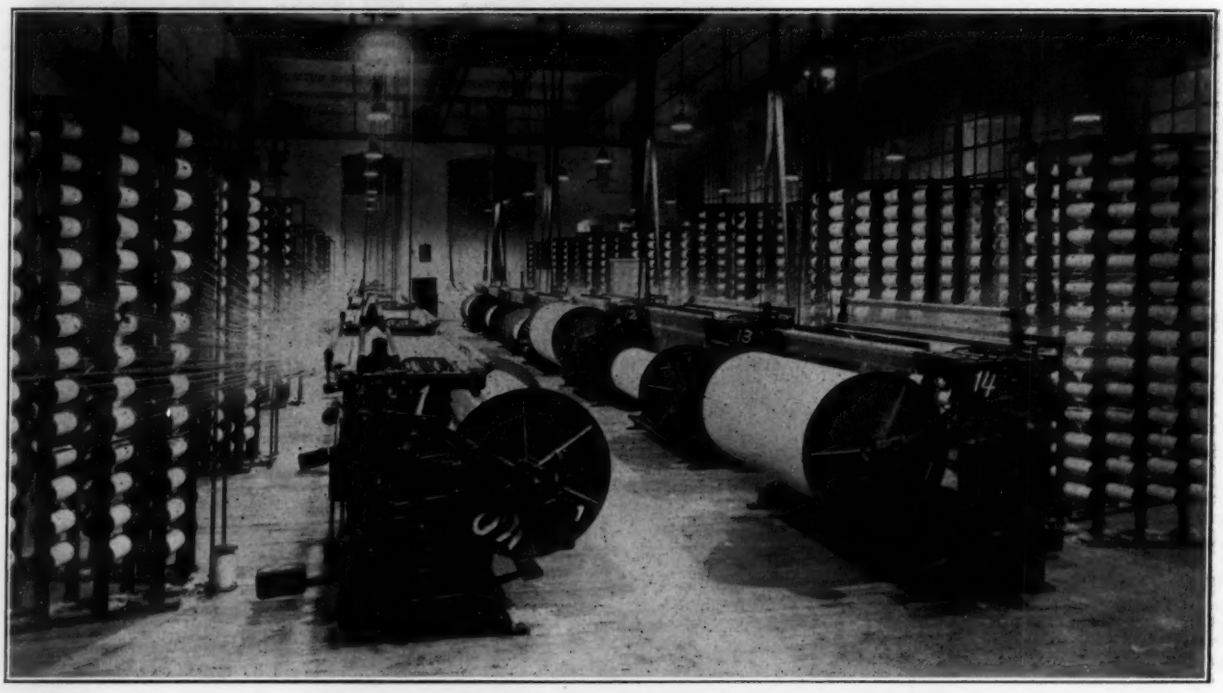
The three principal items in the cost of manufacture are fixed charges, labor and material. If a plant can operate day and night, the fixed charges (interest, taxes, depreciation and overhead) are distributed over almost twice the output. It is true that one fixed charge, lighting, is increased, but this is such a ridiculously small item in the total of the group, that it can be neglected.

It has already been shown that with proper lighting, the output of the operator himself will be increased during the time he is working, thus reducing the labor cost per yard of cloth. In general, what is the relation between cost of lighting and labor expense?

Assuming the rate of wage is 25 cents per hour, the power cost is 2 cents per kilowatt hour and that a 100 watt Mazda C lamp is provided for each operator, the total cost of operation of this lamp, including renewals

and cleaning, would be about 4 cents per hour. Therefore, if with this lighting, a man can save one minute per hour, the extra cost of lighting is more than paid for. In this calculation every allowance is made as to wage rate, power cost, lamp cost, etc., and undoubtedly, under actual conditions in any particular plant, the ratio is very much less.

As to the third item, that of material, some of this is always partially or wholly destroyed. In fact, one of the chief obstacles to economical production is spoilage. If the amount of spoilage in a mill is large the percentage of profits must be correspondingly small. Census experts claim that the spoilage on all goods manufactured in the United States in 1909 amounted to, at least, one per cent of the total product. This one item of waste alone cost



AN EXAMPLE OF GOOD ILLUMINATION.

Fig. 2. A warping room well illuminated by a general lighting system. The illumination is evenly distributed, lamps are hung well out of reach, equipped with reflectors to hide the bright filament and direct the light on the work. Everything is neat and businesslike. Can one question the fact that operations proceed night and day in a highly satisfactory manner?

American manufacturers 150 million dollars. They further claim that 75 per cent of the total spoilage occurred under artificial light, and that 25 per cent, or $28,125,000 could have been avoided by good illumination. Such an enormous leakage from any other cause would not have been overlooked, if a remedy for it could have been found, and it is reasonable to believe that mill men will now appreciate their opportunities to lessen this waste by means of proper illumination.

Spoilage is often the direct result of fatigue. Especially during the latter part of the day, when the operative is tired, he is liable to make careless mistakes, and then just as he needs good illumination most, the daylight fails him.

LIGHT AND SAFETY.

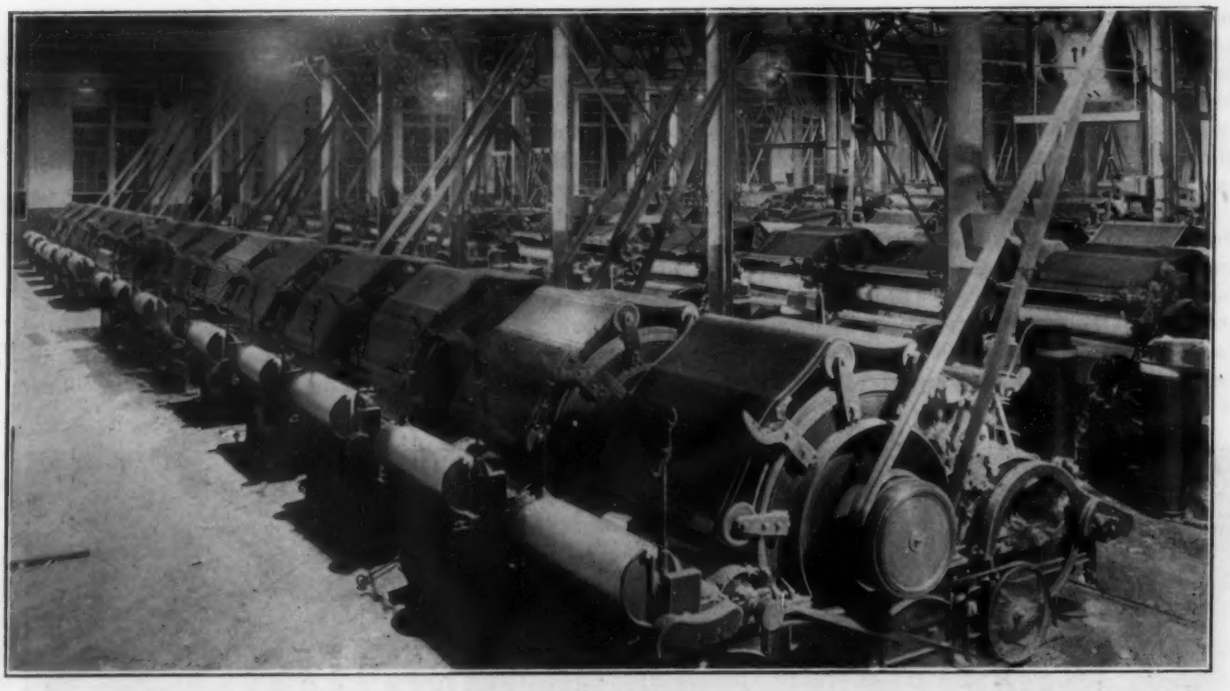
Suitable light is as essential to the safety of employees as any of the safeguards which are applied to belts, pulleys, etc. Every plant manager realizes that the cost of an accident is not completely included in the damages, but the demoralizing affect on the other workers, and the valuable training which the man has had is also a loss. Through the "Safety First" movement, the employee is taught to care for himself and others, and the employer has been compelled to make working conditions as safe as possible.

The departments of labor, in many states, have been empowered by the legislature to put into effect rulings designed to protect the employee. These bodies have recognized that many accidents may be avoided if proper lighting is provided and have prepared codes of lighting which are enforced by departmental inspectors. In the states where such rulings are in effect, it is, of course, essential to comply with them. In other localities, it is to the interest of the plant owner to see that similar conditions prevail.

The illuminating engineer of the Travelers Insurance Company recently presented a paper before the Illuminating Engineering Society under the title "Illumination and One Year's Accidents." A few abstracts from this are of interest.

"There is a widespread belief prevalent today that there are approximately 500,000 avoidable accidents per year in this country, and that about one-quarter of this number are caused directly or indirectly by improper lighting facilities. The records of the workmen's compensation and accident insurance companies offer a fruitful field for the study of accidents, provided particular attention is given to the details in the investigations. In this respect a few notes on the lighting arrangement will often explain the cause of an accident."

In the paper are presented the results of a study of such reports covering the year 1910. All accidents incident to the use of automobiles, teams, bicycles, trolley cars and slippery pavements, as well as accidents occurring in and about coal mines, are omitted. Excluding these causes



PHOTOGRAPHED IN OPERATION.

Fig. 3. The cards in a Southern Cotton mill as they appear by night. In this case the ceiling is high and the overhead is comparatively unobstructed, this combination of conditions makes it possible to use large very efficient lamps with effective results. Here 500 watt Mazda C lamps are used in deep bowl enameled steel reflectors hung 16 feet above the floor on centers 30 x 32 feet.

of accidents, there still remain more than 91,000 accidents which occurred in and about industrial plants, and of this number 23.8 per cent were due directly or indirectly to the lack of proper illumination. This figure corresponds very closely to the estimate of 25 per cent already mentioned.

"A further analysis of the records show that 10 per cent of the total industrial accidents a year were due primarily to inadequate illumination and in the remaining 13.8 per cent, the lack of proper lighting facilities was a contributing cause."

In the paper many typical cases are cited where insufficient or improper illumination were the causes of accidents. These include stumbling over objects lying in shadows, becoming caught in moving machinery, falling into acid vats, being struck by crane hooks, limbs injured by sharp moving parts, falling on stairs, in passageways, and in the shops where there was no light in the immediate vicinity, and so on.

It is not practical in this article to go into much greater detail as to the relation between lighting and accidents, but the subject is of such great importance to the plant operator that it is well for him to give the matter careful study in the attempt to eliminate such conditions from his shop. He should ask himself the questions: "Is there artificial illumination in every part of the plant likely to be traversed by workmen? Are all moving parts clearly visible, and are the lights so shielded that a man will not be temporarily blinded and thus not be able to see gears, belts and other mechanisms?"

(This is the first of a series of articles on cotton mill illumination which this well known authority is writing for COTTON. Others will appear later.—Editor.)

The "How" of Auditing.

Auditing is the analysis of business transactions. In the minds of some business men the definition stops there, but among progressive men who understand the tendencies of the times, auditing is regarded as a constructive science. This is clearly illustrated by the new book "Auditing Procedure," by William B. Castenholz, A. M., C. P. A. It is well planned to give the professional accountant the broad and accurate knowledge which enables him to do constructive work.

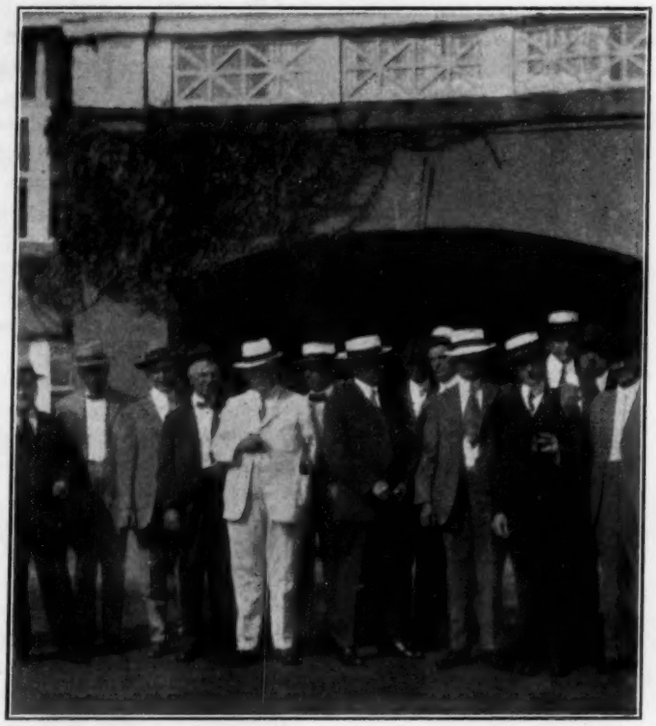
It treats on the audit of balance sheet accounts, of income accounts, of expense accounts, of municipal accounts, the mechanical or detailed side, the auditor's report, and various miscellaneous matters. Of special interest to the practical accountant will be the detailed treatment of special businesses such as railroads and other public service companies, financial institutions, insurance companies, publishers, timber companies, breweries, mines, branch accounts, department stores, contractors, professional men, oil mills, textile mills, and automobile manufacturers.

Mr. Castenholz is a member of the American Institute of Accountants. His experience has brought him into contact with practically every phase of auditing, industrial, educational, and general. While at the University of Illinois, he installed an entirely new system of accounts which is regarded as a model for state universities and has been commended by the United States Bureau of Education in Bulletin 19 (1917). Mr. Castenholz is now director of the Department of Higher Accountancy in the LaSalle Extension University of Chicago, and this book is issued by the University and forms a part of the instruction material in the course.

Middle States Textile Manufacturers Meet

Another of the interesting conventions of the Middle States Textile Manufacturers' Association came to a close with a big chicken dinner at the Pendennis Club Wednesday evening, July 17th, after a day of mixed business and pleasure. Although the organization has only a limited membership of textile men from Ohio, Indiana, Illinois, Missouri, Tennessee and Kentucky, some eighty per cent of these were present at the convention, which was marked by good fellowship and open discussion of many points of interest to the cotton and general textile trade.

The program for the day started off with the members gathering at the Seelbach Hotel at 10 o'clock in the morning, from which point they were transferred to the Louisville Country Club by autos. This club is one of the finest in the South, and boasts a sporty eighteen hole golf course, which is kept in the finest possible condition. The business sessions, there being a morning and afternoon program, were held in the private dining room, overlooking sections of the links, and a beautiful strip of the Ohio river. Following the two business sessions, which were separated by an excellent luncheon at 1 o'clock, the members were taken by auto through Camp Taylor, where they saw thousands of new recruits training on the parade grounds, or killing time around the barracks. The size and acreage of the camp proved a real revelation to many of the members, who hadn't had the opportunity to go through an army training camp. From Camp Taylor the party was taken to the Pendennis Club, where a real Kentucky dinner was served, with the famous mint julep and all of the trimmings. Although the country club is now in dry territory, being within the four mile radius of Camp Taylor, necessitating the closing of the bar, visitors were served from private stock in members' lockers, and had no room to complain of prohibition. The time was too limited to get in a round of golf on the fine links, which made some members wish there was no business session on hand. But conditions at this time are such that business is far more important than pleasure, and several of those present were limited for time.



A SMALL GROUP OF MEMBERS AT THE LOUISVILLE COUNTRY CLUB.

The convention was called to order by Vice-President Philip S. Tuley, of Louisville, who served as chairman in the absence of the president, Capt. Paul J. Marrs, of Henderson, Ky., who was unable to be present. The first matter taken up was

Cotton and Cotton Rules

under which heading considerable discussion was heard relative to the use of ninety day acceptances in purchasing cotton, several of the members believing that acceptances would never become general in the cotton trade, which has long operated on the basis of sight draft, bill of lading attached. Many of the brokers are not in position to grant long terms, and while much discussion of the subject is being heard, it hardly appears feasible with high priced cotton under existing conditions. Mutual weights came in for discussion, and in this connection several members stated that in handling receipts of wet cotton it was necessary to set them aside until they could dry out, and the weight be properly ascertained.

One of the prominent members of the association submitted the following letter which he is sending to all of the cotton brokers and concerns from which he purchases raw materials. Copies of the letter are being sent to all of the members of the association, as the matter is of considerable interest.

"Owing to the recent ruling of the Director-General of Railways and in order to obviate claims for overcharges, the trouble, time and delays in adjustment of claims, we beg to advise you, that in the future we will consider no offers on cotton except upon the condition that the through freight rate and war taxes are to be prepaid on all shipments, in other words, all purchases made by us must be delivered at our station freight and war taxes prepaid. Separate invoices with details must be sent us for each individual shipment, whether for carlot or less than carlot. Seperate drafts must be made for each invoice and attached to drafts. Bill of lading must show car initial and number with number of bales contained in car, the weight of same and the amount of war tax and freight prepaid.

"All cotton purchased must be on mutual weights as heretofore.

"Please acknowledge receipt of this letter and advise if this is agreeable to you."

It was claimed that at the present time the traffic situation is so uncertain, and so many green clerks are employed by railroads and cotton mills, that it would make it much easier to handle shipments on this basis from the mill man's viewpoint. Car initials and numbers when placed on all bills of lading and freight bills makes it much easier to check shipments, and avoid paying for the wrong shipment as has been the case frequently, where shipments were paid for which hadn't been actually shipped. In some cases the railroads transfer cotton from one car to another, thus making it a hard matter to check up shipments, and trace them, but it becomes infinitely more

difficult where a record of the original car in which the shipment was started is not to be had.

Some time back the association undertook to formulate a standard set of Cotton Rules, but since that time the formulated ideas have come into general use, with the result that there is now no need for special adoption of rules.

J. B. Young, of the Jackson Fibre Co., Bemis, Tenn., a branch of the Bemis Bag Co., discussed some of the troubles of cotton men. He stated that in placing cotton in proper shape for shipment, the compress owners are forced to do considerable patching, and fixing of bales before they are in shape for the railroad to accept. The additional tare, composed of sacking, cordage, and metal straps is about five pounds to the bale. On a hundred bale shipment the superintendent will lay out five hundred pounds of material, but as the work is done largely by colored labor and very rapidly, one bale will receive three pounds additional tare, and another eight pounds. The hundred bale shipment will carry the correct tare weight, but if shipped and checked as received, without taking the weights of the entire 100 bales into account, the shipment will not total up correctly, this resulting in many claims.

Claims also result from cotton drying out in hot weather while packed in box cars. Mr. Young called attention to experiences in stacking cotton flat in three bale tiers in warehouses of brick construction, built on brick piers and well off the ground. Cotton placed in this warehouse and taken out a few months later showed a gain in weight of twelve pounds for the lower layer of bales in the bottom tier. The second layer ran eight pounds over, and the top layer four pounds over. The first layer on the second floor or tier ran even, neither having gained nor lost, while the next layer was four pounds short, and the next eight pounds. Therefore the seller would prefer shipping from a basement, and the buyer from the top floor of a warehouse.

Federal Regulation and Price Control

of the cotton market came up for discussion. It was stated by several members that Government demand would probably take between sixty and seventy per cent of the output of the mills, and that this demand had to be filled first, with the commercial demand getting filled when the mills could reach it. In the meantime additional Government orders will be coming in, and commercial orders may be set back several times. This may result in some cancellations of commercial orders, and necessitates special agreements as between mills and consumers, so that the mill can reach some definite basis on how to buy cotton to cover its deliveries. Due to the fact that the commercial orders may be placed back several times, and the cotton market may be advancing, it places the mill man in an unfavorable position, and one in which he has to buy in larger quantites than usual in anticipation of future requirements.

So far the millmen have not been bothered to any extent through regulations changing their products, although one or two cases were cited where mills had been ordered to change their products from a coarse to a fine yarn basis, which naturally means a big reduction in output. Already there has been some limitation of cloth weights, and others may come at any time. However, the situation is such that the mills can't do anything but keep posted as closely as possible on existing conditions, and endeavor to comply in every possible way.

Discussion was heard relative to the work of the War Industries Board, and the tax of twenty-five cents a thousand to meet the needs of the organization efforts, and maintenance of offices to chart the manufacturers and carry out the aims of the board. Louisville is in the Cincinnati zone, which hasn't been well organized as yet, and Louisville hasn't been organized at all, as the backers of the movement have been slow in getting started. Several men discussed this question, and received enlightenment from F. P. Toof, of Paducah, Ky., who has been aiding in the organization work in that district. Members of the association plan to back the movement, although in many cases they have more war orders on hand than they desire, but feel that it is a patriotic movement which should be backed for the general good of the district.

Afternoon Session.

The afternoon session was opened by a talk from Charles A. Wilder, of the Liberty Mutual Insurance Co., of Boston, Mass., which is underwriting textile manufacturers' liability risks in the New England states. This association plans to enter Virginia shortly, and is willing and ready to aid textile manufacturers in other sections of the South in which it is not doing business at the present time. Mr. Wilder showed conclusively that rates with this company were much lower than with the old line insurance companies. He discussed general accident prevention and safety first in the mills, and cited figures showing the perecentage of mechanical accidents in the various New England states. He also read an interesting pamphlet gotten out by his company relative to textile conditions in the New England states, where the accidents run comparatively heavy.

A number of millmen present stated that their accidents didn't run as heavy as those in New England, this being due largely to the fact that in New England the mills have been in operation for many years. Many are not as thoroughly equipped as in the Middle States, where newer models of machinery are used, and where new compensation laws have resulted in manufacturers installing all the safeguards available in an effort to prevent accidents. In this connection the following tabulated figures relative to accidents during the year ending April 30, 1918, was made by Mr. Kramer of the Henderson Cotton Mills, Henderson, Ky.

	REPORTED				NOT REPORTED			
Department	Cases	Days Lost	Compensation	Paid Doctor	Cases	Days Lost	Compensation	Paid Doctor
Card	2	62	$ 34.92	$ 73.00	6	12	none	$ 28.00
Spinning	4	56	15.71	49.00	14	49	none	48.00
Weave	2	68	220.35	56.00	8	52	none	27.50
Yard, E. & S.	1	23	13.60	10.00	6	17	none	14.50
	9	209	$284.58	$188.00	34	130		118.00
Average		23.2	$ 31.62	$ 20.89		3.8		3.47
	34	130		$118.00				
	9	209	$284.58	$188.00				
	43	339	$284.58	$306.00				
Average		7.8	6.62	7.12				

NOTE: Largest claim in Weave room. Operative in tieing in new warp on loom while catching loose threads ran her hand too far—right index finger was caught by cam and so badly smashed that it had to be amputated above second joint, entitling her to 30 weeks at 65 per cent of $10 weekly, amounting to $195.

Mr. Kramer also presented a paper showing what his mill had done along the "Safety-First," plan, this report being as of June 1, 1918. Other papers on the same subject have been filed by the Indiana Cotton Mills and the Louisville Cotton Mills and Chairman Tuley has asked

every member to submit such lists so that the members can work over them and arrive at more definite conclusions as to the best methods for preventing accidents by safeguarding. The papers submitted, follow:

Safety First

Henderson, Ky., at the Henderson Cotton Mills, as of June 1st, 1918.

Boilers: Boilers are provided with water columns, safety blow off valves, high and low water alarms, 4-inch pop safety valves on each boiler.

Engines: Automatic stops on all engines, also automatic governor controls. Fly wheels adequately guarded with iron pipe railings and 6-inch toe boards around openings.

Steam pipes: All steam pipes are insulated with asbestos coverings.

Dynamo: Dynamo guarded with iron pipe railings.

Machine shop: Lathe gears protected with metal coverings. Gear and pipe cutters, drill presses and emery wheels have metal protectors. Drive belts guarded with galvanized iron guards. Circular and band saws have galvanized iron guards. Shop dynamo is housed in.

Openers: Gearing and drive pulleys protected with metal covers. Belt shifters provided.

Pickers: Gearing is cased with metal. Drive pulleys are protected with wood fibre guards of proper height. Fan in picker room is railed in. Pyrene fire extinguishers are provided.

Cards: All are provided with shippers. Pulleys and belts are protected with wood fibre guards. Closest distance between cards 3 feet 6 inches.

Drawing frames: Metal hoods enclose all drawing rolls. Drive pulleys protected with wood fibre guards.

Roving machinery: All gears have metal covers and pulleys are protected with wood fibre guards. Shippers are also provided.

Spinning: Adequately guarded with wood fibre of proper height.

Slashers: Drive protected with galvanized iron wire screen. Cut marker gears as protected with metal covers.

Looms: Drive pulleys protected by filling boxes. Belt holes protected with cast iron belt guards.

Cloth room: Brusher belts and pulleys protected with leather guards.

Miscellaneous: Cotton elevator is driven by motor. Switch is kept locked when not in use; side cased in, operated by only one man. All mill elevators are cased inside, of 6 ft. height, have large bell signals. Bells attached to head beams. Danger signs are provided. Each elevator in charge of regular attendant; employees are not permitted to use them. Gates extend 15 inches out from elevator wells. Bevel toe boards are under each floor of elevator shaft. Iron pipe railings on all stairways, platforms and runways. Headless set screws have replaced all extended set screws on all collars. Floor openings and belts adequately cased.

The safety first measures of the Indiana Cotton Mills, at Cannelton, Ind.

Picker room: Beater belts screened with woven bale ties. Lap heads screened with galvanized wire about one-half inch mesh. Beater ends covered with Russian iron fastened to beater boxes.

Card room: Card belt shippers. Drawing frame head belts screened with galvanized iron wire about one-half inch mesh, and about four feet high. On the slubbers the head belts screened with galvanized iron wire about half inch mesh, about five feet high. Shippers have safety locks. Floor openings screened about six feet high with ¾-inch flooring.

Spinning room: Spinning frame belts guarded with galvanized iron half inch mesh, four feet high. All belts with more of an angle than 22 degrees have hair protectors seven feet high made of wood frames and plaster board.

Dressing room: Floor openings screened with galvanized iron wire, half inch mesh six feet high. Spooler driving belts screened with same wire and same height. Also warpers.

Basement: Engine fly wheel cased with flooring and glass full height; other belts and low pulleys guarded with wood railing. 30 k.w. generator has pipe railing. Main engine has automatic stop electric signal from all rooms and guard pipe rails three feet high. Lighting engine has guard pipe rails three feet high.

PHILIP E. TULEY, PRESIDENT OF THE LOUISVILLE COTTON MILLS, RE-ELECTED VICE-PRESIDENT OF THE MIDDLE STATES TEXTILE MFGRS. ASSOCIATION AND THE PRESIDING OFFICER AT THE CONVENTION.

Boiler room: Boilers have water alarm. Safety plug automatic valves. Pipe railing on top. Pipe rails around step off from engine floor to boiler floor. All steam pipes covered. Boiler feed pumps have automatic regulators.

Machine shop: Band saw wheels covered with light lattice made of wood, drive belt guarded with screen wire five feet high. Circular saw has guard fastened to splitter, drive belt screened five feet high with galvanized iron wire half inch mesh.

Elevator: Safety lock and grip. Automatic floor doors, screened with galvanized iron seven feet high, carries freight only.

Fire escapes: Three on the back of the mill, two built

with platform at each floor; one ladder in center of mill with platform at each floor.

Shafting: Headless set screws in all collars.

Stairways in tower closed off from main building with ironclad doors. Hand rails on either side of steps.

Safety first measures at the Louisville Cotton Mills are as follows:

Boilers are provided with water columns and whistles, pop safety valves and are to be equipped at once with automatic non-return valves.

Engines are equipped with automatic safety stops operated from each floor by push buttons.

All elevators have automatic safety grips and locks and self-closing gates. All weights and cables are enclosed. Each elevator, except in the cotton warehouse, is operated by a regular attendant. Danger signs are conspicuously displayed on each elevator gate. Self-closing fire doors are provided at each floor of all elevator shafts. Use of elevator for carrying the help is not permitted. Bevel toe boards are placed under each floor at elevator shaft.

All picker beater covers are automatically locked down to prevent access to the beater while it is in motion. All beater belts and pulleys are hooded with sheet metal guards, as are all fan and calender roll belts and pulleys. Gearing is adequately guarded by the builder. Special instructions and illustrations by photographs are given as to proper method of starting laps on the lap roll.

Combers are supplied with an automatic brake and lock to protect against injury from needles of half lap. Machines are supplied with notices to *Stop Machines While Cleaning.*

Shippers have been provided on all cards to overcome the old method of hand shipping.

On the drawing frames sheet iron hoods enclose all driving pulleys and belts to a height of about two feet. All bottom shafts and pulleys, as well as the front roll driving pulleys, are being hooded.

Roving machinery driving pulleys and belts are provided with a removable wire mesh guard. Shippers are provided with a lock which they are attempting to make automatic. All machines, or pairs, are provided with a notice conspicuously displayed—Stop Machines While Cleaning.

All openings in floors are protected by iron railing and 6-inch toe boards to prevent tools, etc., being knocked through the opening. All stair landings are protected in the same way.

Nothing but safety headless set screws are used on shafting. All shafting is boxed at dangerous points.

Fire escapes are provided at both front and back of mill, accessible from roof and each floor. A folding step is provided at each landing to make access to the escape easy. Fire extinguishers are provided in all departments.

Signs are posted everywhere cautioning girls and women to keep their hair knotted close to the head and no hair ribbons.

Photographs are exhibited to show right and wrong way to put belts on pulleys, and other contrasting right and wrong ways of operations. All overhead belts 10 inches and over are protected underneath by an iron ladder and pulleys are hooded to prevent throwing of the belt.

Dye house wringers are completely enclosed with a wire mesh guard.

Large emery wheels are hooded with steel hoods. Lathe gearing guarded at all points.

All machine belts throughout mill, except cards and combers, which are protected by shippers and are slow running, are guarded by wire mesh and sheet metal guards.

Circular saw in carpenter shop is equipped with an adjustable guard to prevent operator's hand from being drawn in. Danger targets are also placed on a level with operator's eyes, calling attention to proper and improper methods of operating saw.

All exposed hot pipes are insulated with asbestos.

All pumps, engines, etc., are guarded by iron railings.

All exposed electrical wiring is in conduit. Generators are placed in a room partitioned off to itself.

Along with this discussion several members were heard from. Philip Tuley stated that he was insured by the old line companies which require filing of all reports of accidents, but that he goes it one better and files a report even of the most trivial accidents. This takes a lot of time, but is safer in the long run, as many employees blame every possible injury or illness on the mill, regardless of how and where it was received.

Lee Rodman stated that he furnished free medical attention to all employees that are ill, and endeavored to keep ill employes out of the plant, as a half sick employee is a risk, and subject to accidents which would not befall a well one. By sending them home and furnishing medical attention he gets them back more quickly, and finds that it results in a smaller amount of compensation. When they know that for any alleged illness or injury they will be visited by a doctor there are fewer cases and less time lost.

Bonuses or Labor Premiums.

The question of paying bonuses or labor premiums semi-annually was taken up by C. A. Young, of Indianapolis, who stated that he had found that where bonuses were paid in the winter months there was a smaller tendency to lay off, and have a good time on the extra pay. In the winter employees need money to a greater extent for clothing, coal and necessities. The money comes at a more opportune time, and is appreciated to a greater extent. At the same time the plant is probably warmer and more comfortable than the home, and they are more willing to stick on the job. However, women are hard to keep on the job in the summer time anyhow, and given a bonus in July results in employees laying off. This to a large extent spoils the effects of the bonus system, as it results in lay-offs instead of keeping employees steadily on the job. Many concerns are now paying a ten per cent bonus for six months occupation of a position, but by paying it once a year better results are obtainable in Mr. Young's opinion.

Discussion of the high cost of labor, and relative small increase in the mill price of textiles, yarns, etc., brought out some interesting points. One member stated that it appeared as though the textile people had always figured on a basis of how cheap they could manufacture, not from the point of merely holding down costs, but in order to sell products at the lowest possible margin, this resulting in some of the bad conditions existing in the trade. It was alleged that in the Middle States the increase in labor cost for textile workers had been about 66 to 70 per cent as compared with wages paid in 1916, while the increase as reported in some of the New England districts was eighty-seven per cent over that of 1914. The increased cost of liv-

ing in the same period has been fifty-five per cent approximately, leaving the employee a comfortable increase.

However, everyone is demanding labor, and women are entering many industries which never before employed female labor. The demand and price has been bid up, and women are coming to bat in good shape in many of these industries. W.G. Young, of St. Louis, reported that a large foundry in that city was employing negro women at $3 a day to handle scrap iron into puddling furnaces, and bar iron out from the rolls, and that they were doing heavy manual labor, and apparently doing it well.

Comparing Costs.

While the textile world has been standing still so far as improving market conditions, and getting prices are concerned, many other industries have been going ahead in leaps and bounds. Lee Rodman stated that he recently attended a lumber convention at Memphis, and hardly believed he was awake when he heard the chairman giving the members "the devil," for failure in some cases to make reports by the tenth of each month, showing stock on hand, production, and sales and production costs. As a result of this excellent work the lumber people are not working in the dark, and know the markets and available supply well enough to enable them to get prices and work in harmony.

One of the members called attention to the growing need of keeping the cost system posted even more closely than ever due to the rapidly changing conditions of the market, and stated that this work should be done regardless of the shortage of office workers. Some manufacturers endeavor to keep a semblance of a list, and merely adjust it to suit their ideas, without securing definite figures, resulting in their groping in the dark, which may bring them out at the small end of the horn most any time. Even though the figures are not actually used very often they should be kept closely posted at all times, it was claimed.

The question of whether the association should not hold two meetings a year instead of one was brought up. Several believed that it would be much better to get together oftener in view of the rapidly changing conditions, while others were of the opinion that these very changes in conditions required so much time at the office that it was hard to get away for two meetings, especially with the various patriotic movements coming up which require time. The matter was left open, but from indications another meeting will be held in November or late October.

The nominating committee named for re-election all the old officers, and a new board of governors. The present list is composed of president, Capt. Paul J. Marrs, Henderson, Ky.; vice-president, Philip S. Tuley, Louisville; secretary-treasurer, Lee Rodman. Directors—R. A. Cochran, C. A. Young, E. S. Hobbs and F. P. Toof.

One of the interesting ideas advanced by one of the members was relative to endeavoring to keep strike publicity out of the daily press. This member stated that if the press stopped headlining strikes there would be an appreciable decrease in the number of strikes. He called attention to the strikes at St. Louis last spring, in which many trades were involved. One large textile mill instantly stopped advertising for labor, and kept its organization intact during the general strike period, due to the fact that employees are not as likely to strike when times appear dull, and the manufacturer is not advertising for help, as when he is advertising extensively. This member also stated that one of the easiest ways to break up brewing turoble was to have trusted employes in the ranks, who reported all disturbances or unrest at the outset. The company can either raise wages and nip the trouble in the bud, or begin laying off the agitators.

E. G. Eberhard, of the Mishawaka Woolen Mills, Mishawaka, Ind., in discussing liability insurance stated that for the past three years his company had carried its own insurance, due largely to the fact that it operated a company of such large proportions that the percentage of accidents was relatively small, and it was much cheaper to set aside an insurance fund, and pay company premiums to this fund, which could be drawn upon for other purposes when needed. The company has a number of surgeons on call at all times, and operates a hospital department of its own. However, this plan would probably be unsuccessful in a small plant, where several accidents coming together would almost break the organization, but can be handled nicely in a big plant where the total insurance each year is enough to more than pay any losses occurring.

Taken altogether it was an interesting and valuable meeting.

Exposition Cotton Mills Versus Callan.

Under the ruling of Judge John T. Pendleton in the Superior Court of Fulton County, Georgia, outside persons cannot interfere with employees of manufacturing establishments in efforts to persuade such employees to join a labor union where there exists a contract between the employer and the employee, that the employee shall not join a labor union.

This ruling was made by Judge Pendleton on July 18, 1918, after a hearing lasting several days in the case of Exposition Cotton Mills against J. A. Callan and others.

The case has attracted considerable attention. For some weeks during 1917 Callan was engaged in an effort to unionize the employees of the cotton mills at Griffin, Georgia, and later carried on such work at Columbus. His activities, and those of his associates, looking to the unionization of the employees of the Exposition Cotton Mills at Atlanta commenced in the early part of June of this year, and this case grew out of those efforts.

In this ruling Judge Pendleton followed the ruling of the Supreme Court of the United States in the case of Hitchman Coal & Coke Co., v. Mitchell, which was decided in December, 1917.

The order made by Judge Pendleton in the Exposition Cotton Mill case is as follows:

"After hearing the evidence and argument of counsel, It is Considered, Ordered and Adjudged, that the defendants, to-wit: J. A. Callan, J. L. Mills, T. L. Lane, Lawrence Whitfield, C. J. Higginbotham, W. G Chappelle, Miss Ruth Harris, Mrs. Beulah Strawn, Cora Dobbs, Annie Williams, Carl Donahoo, Amy Clark, Fred Alberton, G. C. Taylor, A. H. Mulkey, Jim Grizzard, W. E. Fleming, Walter Cash, Rube Brice and Jim Rutherford and their agents and confederates, are enjoined from interfering with or attempting to interfere with the plaintiff's employees for the purpose of inducing the plaintiff's employees to join a labor union without the consent of the plaintiff, by representing that they would suffer no loss by leaving the plaintiff's employ-

ment and joining the union, or because the plaintiff was running a non-union mill.

"And said defendants, their agents and confederates are further enjoined from interfering with or attempting to interfere with the plaintiff's employees for the purpose of unionizing the mill without the plaintiff's consent, and in aid of such purpose knowingly and wilfully bringing about the breaking by plaintiff's employees of contracts of service known at the time to exist with plaintiff's present or future employees.

"And the said defendants, their agents and confederates, are further enjoined from inducing or seeking to induce the employees of the plaintiff, present or future, to leave the service of the plaintiff by intimidation, misrepresentation, abusive language, promises of better conditions and shorter hours and better pay, or persuasion.

"This injunction to remain of force until the further order of this court."

Cotton Manufacturers' Association of North Carolina Meets at Asheville.

The summer meeting of the Cotton Manufacturers Association of North Carolina was called to order by President Jno. L. Patterson at 10 A. M., July 5th, at the Battery Park Hotel, Asheville, N. C.

The first address on the program was by W. M. Hendren, of Winston-Salem, N. C., on "Legal Phases of Child Labor Legislation." Mr. Hendren was one of the attorneys who assisted in having the Keating Bill declared unconstitutional and he pointed out not only the legal phases of that law but of numerous bills that had been introduced in Congress since the Keating Law was held unconstitutional.

Another address was by Mr. Smead, formerly of the Fuel Administration, but now employed as fuel expert by a number of North Carolina mills.

Friday afternoon, at the second session Judge J. C. Pritchard delivered an able patriotic address, which was well received.

On Friday night an executive session was held.

The session on Saturday morning was called to order at 10:30 by President Patterson, who introduced Gov. Bickett of North Carolina for a general address. He was followed by P. P. Claxton, Director of U. S. Department of Education, who spoke on the necessity of education in mill villages. The meeting then went into executive session and the reports of the secretary and treasurer and the various standing committees were read and approved.

Following these came the report of the resolutions committee and among other resolutions adopted, was the following on state child labor laws:

"Whereas the North Carolina Cotton Manufacturers' Association is on record advocating the passage of a 12-year compulsory school law, which is now in effect, and has previously recommended that the age limit for compulsory education should be raised to 14 years,

"Now, therefore, this association respectfully urges the next general assembly to enact a law in accordance with the subject matter of this resolution, and in this connection suggests the wisdom of manual training for boys and domestic science for girls, and that it is the sense of the association that the school term may be made six months instead of four.

"Resolved further, that it is the sense of the association, now in session in the city of Asheville, that no boy or girl under 14 years of age shall be employed or worked in any factory or manufacturing establishment in this state; and that no boy or girl under 16 shall be employed or worked in any mill, factory, or manufacturing establishment in this state, between the hours of 9:30 p. m. and 6 a. m.

"That we respectfully request the next general assembly of North Carolina to enact such laws as will regulate the working of boys and girls in our state as herein set forth, and that said law shall contain such provisions as are necessary to enforce and make effective said law."

The officers elected for the ensuing year were as follows:

ARTHUR J. DRAPER, THE PRESIDENT-ELECT.

President A. J. Draper, Charlotte, N. C.; first vice president, A. M. Dixon, Gastonia, N. C.; second vice president, T. C. Leak, Rockingham, N. C.; third vice president, A. H. Bahnson, Winston-Salem, N. C.; secretary and treasurer, Hunter Marshall, Jr., Charlotte, N. C.

The meeting then adjourned.

Southern Depots for Non-Fluid Oils.

The New York and New Jersey Lubricant Co., manufacturers of non-fluid oil—lubricants for textile machinery—have established depots in Charlotte, N. C., and Atlanta, Ga., to take care of their increasing business. These depots will enable them to give much quicker service to southern orders avoiding the delays incidental to freight congestion. The company states that their business has so increased during the past year that they have been running their new Newark works to capacity since it started last fall. Lewis W. Thomason is district manager for the south with headquarters at Charlotte, N. C.

Saving Men for Uncle Sam.

By A. C. Faeh *

Textile industries due to the heavy draft on their man-help by the Government, have been forced to give serious consideration to the transportation problems within their own plants. Many methods have been devised to eliminate the congestion, but none have met with such instant favor or produced such satisfactory results as the introduction of the industrial tractor and truck. While these machines are well adapted for all industries, yet textiles present an exceptional opportunity to demonstrate their unusual ability in coping with all indoor transportation situations.

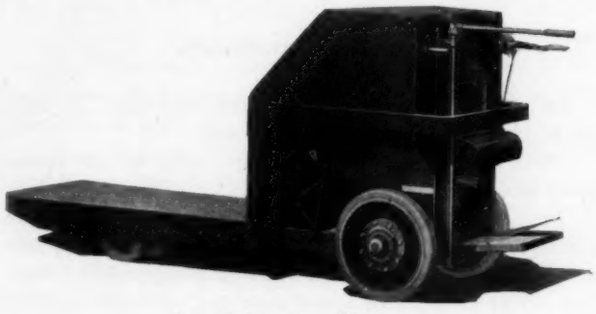
While the textile plants in most cases cover a wide area of ground, conditions nevertheless are so congested that it is only with the greatest concern in reference to inside transportation problems that any speed is secured.

One of the large concerns entering this field has already five different types developed to care for the needs of the various industries. For the textile industry the tractor, the duty of which is to pull trailers heavily loaded, and the elevating truck, the prime feature of which is to get under a load, raise it and transport it to its destination in the plant, have been developed to a high point of efficiency.

These machines are built in two and four wheel drives and four wheel steers and where they have to travel up inclines which may be more or less wet and slippery, a four wheel drive installation would be the logical type. These machines have exceptional traction.

The outstanding feature of these tractors and trucks is the "interstandardization" feature. This word was coined because it was best fitted to fully describe this salient point. "Interstandardization" means that 98 per cent of all the vital parts are interchangeable on the six different types of tractors and trucks as well as interchangeable on the individual car itself. In other words the controller, worm gearing, automatic switch, controller handle, the steering handle, motor, tires, wheels, steering mechanism and brake parts are interchangeable on the various models.

To show the advantage of this inter-changeability it need but be outlined that a two wheel drive tractor or truck



AN ELEVATING TRACTOR.

can be made into a four wheel drive by simply replacing the trailing axle with a live or driving axle.

The motor for the tractor is 48 volts, 5 horsepower, and for the trucks 24 volts, 4 horsepower. Attached to the axle the motor transmits its torque directly to the worm and worm wheel. The motor is the sturdy type which has been manufactured by the company in its entirety ever since its entrance into the electric vehicle field. This resulted in producing a motor of unexcelled merit.

The tractors and trucks are operated by a drum con-

*With The Baker R. & L. Company, Cleveland, Ohio.

A TRACTOR WITH TRAILERS.

troller of the heavy service type with four speeds forward and reverse. Constant depression of the foot lever closes the circuit so that the machine may be operated. By releasing the foot pressure on the lever the circuit is opened and a powerful brake applied locking all four wheels simultaneously.

A four wheel steer mechanism is ingenously designed and permits of unusual short turning radius giving the greatest flexibility in handling. The wheels on the tractors and trucks, except the elevating type are fitted with 3½ x 20-inch tires. The speed of the various machines is five miles per hour loaded and seven miles per hour unloaded.

Urges Standardization.

In a recent letter on future export conditions, H. Lauten of the Prince Lauten Company says:

Many questions are coming up daily in the cotton goods business.

Price fixing is the item of most interest and will be an accomplished fact within a short space of time. Exactly how it will regulate the condition which it is supposed to regulate is still a matter of uncertainty and speculation.

Another very important matter coming up in connection therewith is the item of distribution. In any ordinary market there would not be any question about that, but now, with stocks depleted and enormously curtailed production due to government requirements and other causes, such as labor, etc., this becomes a very serious question.

Fabric standardization is being taken up as offering a partial solution.

The importance of the export market is being more appreciated. We had a "flying start" due to the war and so far it has been easy sailing, but let us remember that some day this grim business of war will be over and a mighty fleet will be sailing the oceans of the world in peaceful pursuits and it will depend on the American manufacturers whether the holds will be filled with the products of American labor.

While the war continues there will be a continued scarcity of materials, and competition will not be felt as keenly as it will be after the declaration of peace is a certainty. Government requirements will then naturally become less and there will be correspondingly more merchandise available for civilian uses and export, and the lower we can keep the cost of production, the bigger will be our chance to hold the export business. After the war European costs of production, principally labor, will be more on a level with our own, so our main trouble will be to hold down to a minimum all other expenses. Cooperation, combination and direct representation by specialists will do the rest. The organization of mills for export trade, working in conjunction with houses specializing on the export of textiles, will regulate and adjust production and bring about a minimum number of different qualities and maximum quantities of each number.

Some Facts Regarding Child Labor.

Such is the title of the leading editorial in *The Passing Show*, a magazine that has just made its bow to the public from Washington, D. C. Cotton manufacturers will be interested in perusing it and should write for the July 1st number.

Do not forget that War Savings Stamps are not for children only. Most of the squandering is done by the grown-ups.

Standardizing Plant Upkeep

BY ROBERT E. GRAHAM.*

During the crucial test of the war, manufacturers are paying greater attention to the physical well-being of their plants than ever before. The necessity of keeping output at its highest speed and quality, the difficulty of securing the material for additions or repairs, the need of utilizing every possible square foot of floor space in order to keep overhead expenses at its minimum, have resulted in the executives of the average manufacturing company scrutinizing every bit of their property and insuring its top-notch efficiency.

During the past two years, the value of light walls has been so strongly impressed upon manufacturers that there are few who doubt the efficacy of brightening their dark rooms by the application of white paints. Those who scoffed at the idea at first have been converted as they have learned of greater production at lower cost in rival plants which "have seen the light and saved it."

Summed up, lighter walls prove their value in the following ways:

(1) Light walls result in better workmanship. Fewer units of production are rejected by the inspectors and almost no defective units are passed. There are few operations in the modern factory in which eyesight is not an important factor. The diffusion of sunlight from the white walls throws the light on the work, relieves the mental strain of difficult sight and eliminates the many accidents due to faulty lighting and semi-darkness.

(2) Light walls develop greater speed. The workman who can see what he is doing not only can perform the various operations more speedily but loses that fear of accident which has contributed to slow production. And greater speed means greater profits because of the lessening of labor cost, just as fewer rejections by the inspectors reduce the same important factor of cost.

(3) Light walls heighten the loyalty of the entire organization. The workman is better satisfied, is less tired after his day's work and has a pleasanter mental attitude toward his work. It has been definitely determined that this loyalty and pride in plant has an actual cash value, through the betterment of the man's work. The resultant reduction in the cost of the labor turnover is another mighty factor.

(4) Light walls lengthen the life of the plant's buildings. Painted walls fight off the decay and destruction caused by the weather and other things contributing to the physical aging of the property. By cutting down these hostile influences, they increase the plant's useful life and therefore reduce the annual amortization fund.

(5) Light walls lessen the fire hazard. Greasy rags and other sources of spontaneous combustion are much more readily noticed. There are no dark corners in which incipient fires can gather headway until too late. To this better opportunity for fire prevention inspection, can be added the point of the workman's pride in the cleanliness of his surroundings which makes him hesitate before dirtying the walls and floors with greasy waste and similar refuse.

(6) Light walls better the health of the employee. Sunlight is a foe to disease and the more that is let into the plant, the less the likelihood of idle machines because of the illness of the operators. "Keep on the job" is the slogan of industrial America today, from the standpoint of health as well as from patriotism, and white walls contribute strongly to this result.

White walls simplify the problem of the woman worker. Thousands of women have left their homes to seek congenial employment for the period of the war. If there has been any serious criticism about female labor, it has been that of indifference to the need of working every day. The woman is more sensitive to surroundings than is the man. She is more influenced by bright, cheerful rooms in which to work, by clean rest rooms. We know of case after case where "brightening up" the workrooms has greatly cut down the inconstancy of female labor, with the reduction of labor cost that naturally follows.

These facts which I have briefly summarized are now accepted without argument by the great majority of plant executives today. They have been proved in hundreds of instances and many concerns can point to rising curves in their profit diagrams which they know are due to whiter, brighter workrooms.

But why stop at the walls? If it is definitely established that the application of paint to one section of the plant has a definite money value does it not follow that the extension of the plan will result in increased assets?

Machinery, piping, boilers, smokestacks, heating systems, the outside of the buildings, the various homes and other community structures owned by the company which has extended its interest into the home life of its employees, the water tanks, the floors—all are bettered and made of greater productive value by being painted as often as necessary. Practically every one of the items proved as definite reasons for the upkeep of the walls applies in these instances as well.

Every unit of construction and equipment in the modern factory has its own special conditions of paint application to be considered. A concrete wall needs a compound, far different from that applied to a steel smokestack. These points must be taken into account when the painting program is decided.

In order to eliminate confusion between various piping systems and to follow a definite paint policy throughout the plant, a certain color is assigned to a specific duty. For example, in one plant the sprinkler pipes are red, the waste pipes gray, the water pipes black, and the steam pipes brown. Similar division of units is extended throughout the plant.

As soon as compound and color have been decided, the logical next step is to standardize the plan and get it down on paper so as to avoid confusion and eliminate changes. An upkeep standardization chart for paints is prepared and

*Manager of the Department of Industrial Upkeep for The Sherwin-Williams Company

hung in the office of the plant superintendent, with a copy in the files of the paint manufacturer. Each application has a specific number or letter which designates, to both the plant executives and the paint manufacturer, the duty, the color and the compound.

Here is an example showing how simply the plan works:

The factory superintendent is passing through a certain room when he notices that it is time to touch up the sprinkler system. When he reaches his office he looks at his standardization chart and finds that the key number of his sprinkler system is, for example, "22." He writes an order for enough of "Number 22" to take care of the particular job. The order is sent to the paint manufacturer, who identifies the compound from his key chart and makes shipment. This insures that the factory receives identically the same color and grade of product as was at first applied, thus making "touching up" possible without any "spotty" appearance.

The standardization chart saves time for the owner of the plant in selecting and ordering, for the paint manufacturer in filling the order, and, therefore, reduces the time in transit. The chart saves expense through this saving of time and because it is possible to avoid possible price jumps by contracting for sufficient paint to meet all needs for a fiscal year. The plan also eliminates the disorder and loss of production due to a general "clean up and paint up" period, because the work in the various departments can be so scheduled as to delay production to the slightest possible degree.

A most important feature is the insurance of a standard quality of paints. The key number or letter designates a definite compound in the laboratory and factory of the paint manufacturer, a mixture which does not deviate in any way from previous shipments.

Here is still another important point. The study of the engineers of the paint manufacturers results in the specifying—at least, in our own case—of particular products for particular purposes. A paint, or varnish, or enamel, may be especially successful in one case, yet in another, with different conditions, it may be a failure. There is no paint panacea, no "Cure-all" for all needs.

Since the origination and perfection of the paint standardization chart for industrial plants there has been a steady and marked increase in the number of industries which have adopted it. In each instance the special plant has been thoroughly diagnosed and a prescription for the different uses written which holds for all time.

The standardization plan is based on direct contact between the paint manufacturer and the consumer. No retailer can spare the time to make the exhaustive study of conditions necessary to evolve a complete, trouble-proof system. This investigation is a task for specialists, men familiar with what has been done in hundreds of similar cases throughout the country.

And this very need simplifies the task, because it obviates the expense in time and money necessary when goods must be shipped to the retailer, checked up by him, reshipped to the plant and there again checked. Rapid fire action is possible, while telegraphic orders, since they contain merely the quantity and the key number or letter, are entirely practicable.

American industry at last realizes that it must concentrate on essentials, in product and in methods of production. Actual value of result must show. This is no time for experiment, for casting about for methods which may or may not achieve the desired result. The manufacturers of the nation are steadily adopting the standardization of upkeep and in every instance are showing the definite, dollars-and-cents value of so doing.

Initiative.

Dictionaries define initiative as the ability to start or originate.

It is one of the four ingredients in the prize recipe for success—the other three being imagination, industry and enthusiasm!

The best illustration of its meaning was born in Genoa in 1451 and proved his right to the title by insisting upon discovering a new world in spite of the fact that every one said it was impossible.

Christopher Columbus had initiative plus—and no amount of adversity or opposition can defeat a person thus equipped.

Neither he nor any one ever was born with initiative, however. It is a cultivated quality. Of course, inherent ability is a big factor in this, as in everything. But the main-spring is ambition—the man who wants to do a thing will find or make a way to do it. And the man who has a new or better way of doing a thing is the one today most wanted.

Initiative is composed of two parts know-how and one part dare-to. It never roosts in cowards or apologists. It cares nothing for titles, rank or riches. It made of an unknown Corsican the most famous conqueror in history. Less than a century later a train-boy out in Michigan tied up to it—and the result was Edison, master of modern miracles.

Initiative plays no favorites. It would just as soon transform a $10-a-week messenger into the head of a firm as to increase the general manager's salary $5,000 a year.

It spells the difference between men we are compelled to hire and men who compel us to hire them.

It never waits for the boss to indicate, suggest, infer or propose. It is the art of doing something on your own hook, even at the risk of making a mistake.

And mistakes, if rightly used, are guidestakes to increased efficiency—based on experience.

It is the most valuable of all attributes in helping a man to overflow his present position and thus automatically demand a larger measure of responsibility and remuneration.

The world never gets enough of it. The demand today is greater than ever. And it is one of the few things that laughs at years.

The possessor of initiative may be as bald as a Hubbard squash, but no one will pull the age limit on him. He may be blind in one eye and bowlegged, but so long as he dares and does things, his bank account never will know the difference.

The moral to all this is, "Initiative, initiative;" start something; work with your head as well as your hands, and putty up your ears against pessimists who prattle about impossibilities.—*Du Pont Magazine.*

"Labor Unions and the Law"

BY WALTER GORDON MERRITT, of New York.

When I attend a meeting like this, and see representative employers gathered together with the serious purpose of dealing with industrial questions, I realize it is nothing more than a recognition of the old adage that "Eternal vigilance is the price of liberty," and down in the bottom of my heart I entertain the hope that such organizations will double their membership because of the tremendous increased responsibilities of employers, which can only be carried out by organized effort.

With this great struggle abroad, it must not be forgotten that we have domestic problems which confront this and allied countries. It is a day of challenge of men and nations, and the institutions and systems of many nations, and the elementary forces which shape our destiny, will in the near future compel our people to sit in judgment upon the complicated parts of our social structure; some to be thrown into the scrap heap, others to be tossed into the melting pot of the present struggle and re-cast in the foundry of human progress. The Japenese says the present era marks the end of an old civilization and the commencement of a new, but whether that be true or not, I think we can all bear testimony that America will change more within the next five years than Egypt changed in a thousand years. Our institutions are in a plastic and malleable state, and organized labor realizes all too well that the wet clay of the potter today records the slightest touch, while tomorrow, when the clay is dry and hard and popular interest abated, it'll be difficult to re-cast. So it falls upon men of influence and responsibilty who appreciate these dangers, to meet the crisis now confronting us, and see that the potter's and sculptor's of our national institutions shall not leave them crooked and awry, to plague us for unborn generations.

Extracts from an address presented before the joint convention of the Georgia and Alabama Cotton Manufacturer's Associations at New Orleans. A copy of the complete address may be obtained from Lawrence F. Sherman, Executive Secretary, 135 Broadway, New York.

You are the leaders of industrial society; your employees must be led; your courage, imagination and ability create their opportunities. You should receive the recognition to which leaders are entitled, for without your creative leadership sluggish indeed would be our economic history. To forget this obvious fact, or through political cowardice to fail in its timely assertion, is a most alarming tendency. We must not permit the public at large or the workers in particular to forget the supreme importance and necessity of industrial leadership, and we must not scrap that leadership for the rule of the Bolsheviki or incompetent politicians. Employers and employers' associations must have a fair hearing before the people and before our government, and their contribution to the progress and welfare of society must be adequately acknowledged. In these days of spreading democracy that nation will be most successful which is first to recognize its economic leaders.

Importance of Employers' Associations.

We have heard a great deal about the usefulness and importance of labor unions, all of which I freely concede—but it is time that the public gave free acknowledgement and credit to the equal importance and utility of employers' associations. If labor unions have saved us from a kind of industrial oppression, employers' associations have saved us from another kind of industrial tyranny and from much legislation, which sought to lay the axe at the very root of the tree of liberty and equal rights. Just so far as we support organizations to study these problems with patriotic breadth of thought, just so far, and no farther, will employers find national expression, and a defense against some industrial menaces. In the future employers' associations, instead of being selfish institutions to serve class interests, must go squarely before the American public upon the broad platform that they are organizations of patriotic men and the competent leaders of industry, looking to play a national part in the work of industrial reconstruction and prepared to handle these problems with a broad and sane vision and with a liberal and public spirit. They must become the servants of democracy, asking nothing of society but what is for the ultimate good of the nation. Class selfishness must be smothered, but our people must understand that in any scheme of reconstruction, employers' associations in the country must play a great part, if in the solution of the great problems before us anything like an equitable or fair balance between the conflicting interests is to be maintained.

The first essential of reconstruction is a better understanding between the forces of capital and labor, and this can only be attained by mutual frankness and confidence on both sides, and by the establishment of joint agencies for mutual discussion and common counsel. No man ever has suggested, and no man can ever suggest, any better means of bridging the chasm which existed between these interests prior to the war, or eliminating that spirit of social hate and distrust which had become so dangerous when war broke out, but which to some extent will be allayed by the outward peril. If there is one thing which all people who believe in property rights must agree upon, it is that this spirit of social hate must not be revived. A program of peace between classes is just as important as a program of peace between nations, and it is the duty of employers who are leaders in the industrial world to do their part to bring that about by establishing better machinery for mutual intercourse between capital and labor.

But in dealing with all these trite and well-known principles, you will ask what is to be done to correct the evils brought about by the power of organized labor? If organized labor is to have increased sanction and recognition in this country and to grow in membership, as seems to be the writing on the wall, what protection are employers to receive from the excesses and overreaching of that great

and powerful interest? What is your program? You gentlemen have gathered together in a convention to discuss the great questions that affect industries. You know this is one of the greatest questions before the country. What is your program? I doubt if you have any. Have you any idea of a definite, constructive character, with which you will endeavor to meet this menace? I don't believe you have.

Now that is one of the reasons our organization sent me here as its spokesman. We have a program of a definite, constructive character, and we want the co-operation of employers' associations and of individual employers to help us make this program good throughout America, for the preservation of the sound principles of democracy. Our program corresponds to the ideals for which our boys are fighting in France. It is the supremacy of the law; no strikes against the government; industrial liberty; the integrity and enforcibility of contracts; self-determination, or the right of every contented organization of employers and employees to ply its peaceful pursuits without the interference of outside agitators; the right of every employee

WALTER GORDON MERRITT.

to determine without unfair pressure from employer or labor union whether or not he shall join a labor union. That is our program. That is our Magna Charta—our Bill of Rights—and it squares with the traditions and heritage of the American people.

Responsibility Before the Law.

The first plank is the supremacy of the law, which in the present application means that labor unions must be legally responsible within their chosen field of activity. If there is one principle which the entire history of the world has proved, without exception, which the entire experience of mankind proves to be infallible, it is that power must be accompanied with responsibility. For that principle mankind discarded the arrogant doctrine of "The divine right of Kings" for the safeguards of representative democracy, but unless democracy observes that principle, it, too, will be found wanting, and as capable of tyranny as any despotism. When the Government is responsible to the people, the people and the institutions of the people must be responsible to the Government.

Now let us see what this means, because it is the most important message I have to bring. When men gather together in permanent, well-defined organizations, electing common officials, collecting common funds and providing machinery for common purposes, they should be collectively responsible before the law for acts done in furtherance of those collective purposes. They should not be privileged to remain outlaws by refusing to incorporate—collective responsibility must accompany collective action.

Many of you gentlemen do not realize the extent to which labor organizations are financially responsible, if they can be held liable in the courts. There are a number of the large national organizations that have an annual income of over a half million dollars a year; they have a prestige arising out of their name which is necessary to hold their membership; they have a union label which corresponds to your good will in business; and they must pay their rent, their officers' salaries and their benefits. They depend upon property rights, which the State can at a single blow wipe out, and thereby handicap the very basis of their collective action. If made responsible before the law they must be conservative and law abiding in their acts.

When labor unions instigate strikes they must be held responsible for all the lawlessness which grows out of those strikes, and when they enter into collective contracts they must underwrite and guarantee those contracts. The law should not acquit them of this responsibility until they affirmatively demonstrate that they have used the full power of their influence and discipline to prevent such illegal acts.

Union Responsibility for Acts of Agents.

Then the responsibility of unions for the acts of their leaders and pickets should be coequal with the employer's responsibility for the acts of his agents. You gentlemen employ a servant at your peril; you guarantee his conduct to society as long as he is engaged in and about your business. You are held responsible if your chauffeur runs over a person, or a salesman commits a fraud. You cannot go into court and say, "I cautioned him to obey the law, and I used the greatest care in selecting him." The law says you employed him at your peril, and you guaranteed his conduct to society. Now the law must say the same to labor unions when they elect leaders or station pickets, and when the law makes this clear and labor unions respond in damages for the actions of one or two of those pickets, they will send men of discretion and politeness to the picket-line instead of a strong-arm squad.

Now that illustrates what I mean as to responsibility before the law. If we can get these ideas before the public, through the co-operation of your organization and your individual support, do you suppose the great American people, who instinctively feel the difference between right and wrong, is going to accept the demands of organized labor that our laws shall exempt them from responsibility.

Unions Should be Regulated.

This all relates to the question as to whether labor unions can be reached by any kind of legal process, but after you have answered that question, you are confronted with the other question as to what shall be lawful and what be unlawful. That brings up the demand of the Fed-

(*Continued on page* 718.)

Mill Conditions and Market Reviews.

What the Southern Mills Are Doing.

The majority of the cotton mills and other textile mills of this section are now being kept fairly busy on Government orders. However, the commercial demand is so strong at the present time that the majority of plants would have very little trouble in securing all the business they needed without the Government orders. The chief concern at this time is the labor situation, and the abnormally high wages which are being paid workers in other industries, which condition is causing textile mills much trouble in securing and holding help.

The Ohio Falls Dye & Finishing Works has recently started work on an addition which will cost between $60,000 and $65,000, and which will be utilized for dyeing and waterproofing commercial goods. About 12,000 feet of floor space will be added to the plant. The new additions are of brick and of fireproof construction. Manager J. J. Brown reports that most of the machinery has been contracted for.

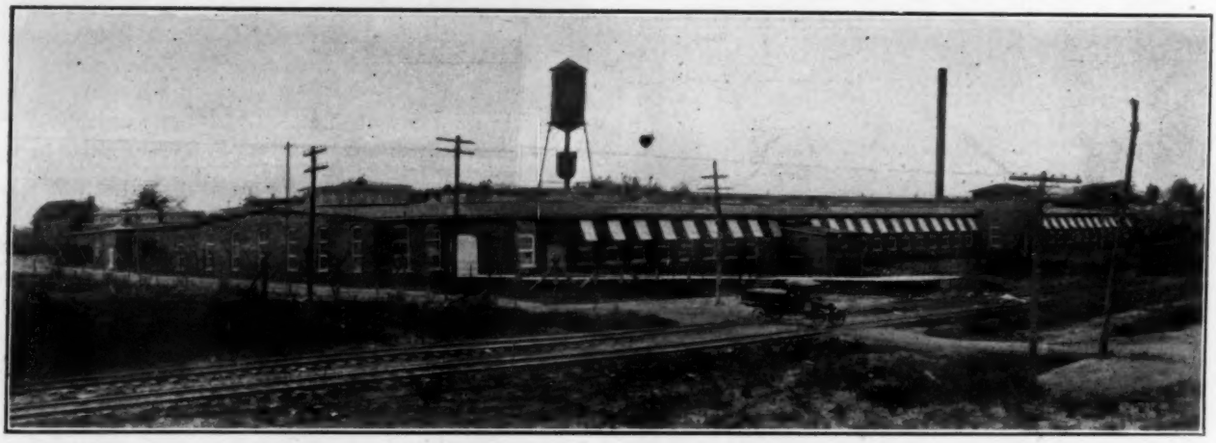
The Puritan Cordage Mills, which recently lost its president in the death of C. T. Wolfe, will make no official change in the officers until the annual election about the first of the year. In the meantime G. W. Babcock, treasurer, will act as presindent; and A. E. Dickman, secretary will act as treasurer. Avery Robinson is vice-president of the company, but is in the army.

Mike Bettinger, of the Tell City Woolen Mills, Tell City, Ind., is one of the few manufacturers of textiles which hasn't any Government contracts. Mr. Bettinger's plant while operated as a woolen mill in name, manufactures jeans, which are largely used by shipbuilders, foundrymen, and many others operating for the Government or on war contracts. Therefore, he does not believe that the fact that he isn't working on direct Givernment contracts will interfere any with his labor supply or coal supply.

C. W. McCord, of the C. W. McCord Co., Louisville, manufacturing cotton yarns and mop yarns at Louisville and Grahampton, Ky., reports that the demand is so great that he has all the business that he can take at the present time, especially in view of the fact that he isn't right sure how the Government may treat him in connection with the labor supply.

Meyer & Brenner, architects in the Paul Jones Bldg., Louisville, have been receiving bids for the construction of a 3-story, 51 x 64 ft, brick mill construction addition to the cotton mill of the Semple Mfg. Co., on Story avenue.

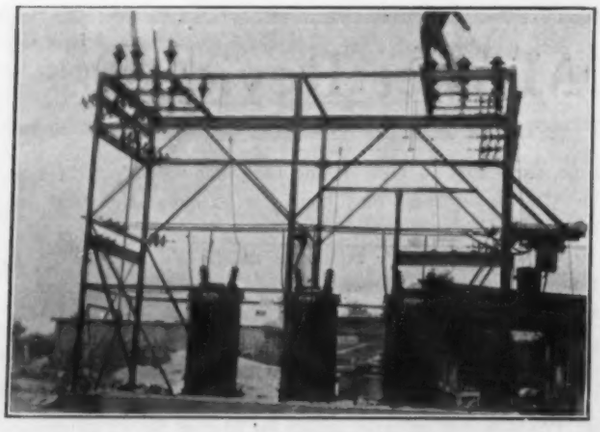
Philip S. Tuley, of the Louisville Cotton Mills, was one of the members of a delegation from the Louisville Board of Trade which recently called on Mayor Smith to discuss effects of enforcement of the vagrancy law, which was passed by the last session of the legislature, and which is similar in effect to the work or fight law. In Kentucky the authorities started enforcing the vagrancy act requiring every man to work a certain number of hours each week, before the Crowder ruling was announced. So far it has proven very successful and has resulted in an appreciable increase in labor, although much labor of low grade is now coming into the plants.



The Palmetto (Ga.) Cotton Mills.

Lee Rodman, manager of the Indiana Cotton Mills, at Cannellton, Ind., who is erecting a large addition to his plant, expects to have quite some establishment when the work is completed. The addition is two stories high, 130 x 230 feet, and of reinforced concrete, with steel sash and standard mill construction, 450-40-inch Stafford automatic looms will be installed in the new department, and additional cards and slubbers will be installed in the old plant. In the new building attractive lunch, locker and rest rooms will be installed, and arrangements made for handling welfare work on a larger scale.

The Bemis Bag Company's branch at Bemis, Madison county, Tenn., has recently gotten out a fifteen page booklet of the town of Bemis, and the plant and buildings of the Jackson Fibre Co., which is the plant manufacturing cotton cloth for the Bemis bag plants. This booklet is attractively designed, many cuts being used showing the attractive homes, plant, buildings, etc., and designed with the purpose of showing labor at a distance from the city the many attractions which the company has to offer to desirable citi-



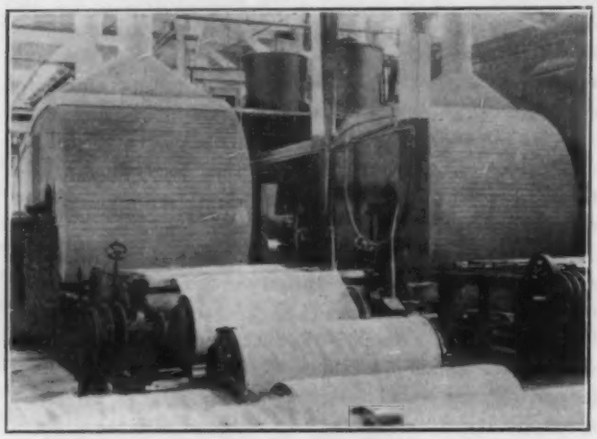
THE TRANSFORMER STATION AT PALMETTO.

zens who desire good work, in comfortable surroundings and at high wages.

An expenditure of $200,000 has been ordered by the Lynchburg (Va.) Cotton Mill Co., for building an additional mill. It provides for $200,000 for machinery, to install 10,400 spindles and 160 looms; also a $60,000 building and $30,000 steam power plant with electric drive.

PALMETTO MILLS OFFICE.

The Palmetto Cotton Mills at Palmetto, Ga., have electrified the entire plant. A transformer station has been installed and motors erected for driving the mill machinery on the group system. Many other improvements are under way or being planned at this mill, these including the building of a new warehouse, the building of a new school house, a new church, and a number of new operative's cottages.



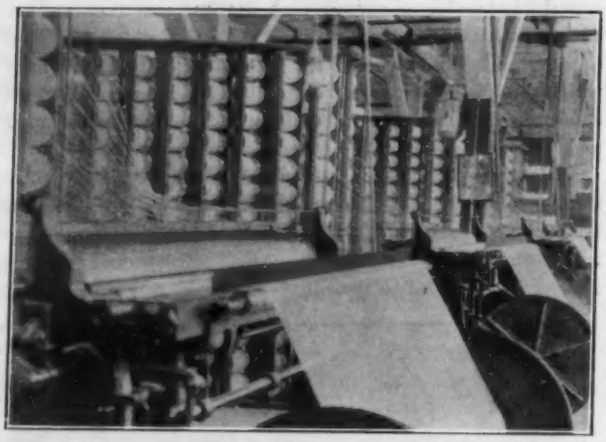
SLASHER ROOM AT PALMETTO MILLS.

The active management of the business comes under Assistant Treasurer C. C. Smith and Supt. W. R. Thomason.

An ice plant is being erected by the Spartan Mills at Spartanburg, S. C., where the company will manufacture ice for the benefit of their operatives.

The Addison Cotton Mills at Edgefield, S. C., are completing the addition to the mill and installing Draper automatic looms. Many other improvements are being made under the active management of Arthur L. Dickenson.

The Laurens (S. C.) Cotton Mills have removed a large frame building to a lot adjoining the mill and they are to



SOME OF THE WARPERS AT PALMETTO MILLS.

install canning machinery for the use of operatives who may desire to take advantage of it.

An addition is being built to the Mandeville Mills at Carrollton, Ga., where it is understood additional spindles will be installed.

The W. A. Handley Mfg. Co., at Roanoke, Ala., is to add 6,000 spindles to its present equipment. This machinery will be furnished by the Saco-Lowell shops.

A new company has been established at Greenville, S. C., which is known as the Okeh Mfg. Co., with a capital stock of $75,000. It is understood that this company is to operate a small yarn mill.

The Marcella Cotton Manufacturing Co., at Eufaula, Ala., has been incorporated with $100,000 capital.

Extensive mill village improvement will be made at the Union Buffalo Cotton Mills at Union, S. C., in the near future.

The Plowman Yarn Mills have been incorporated with a capital stock of $300,000 to take over the Lawrenceville Yarn Mills at Lawrenceville, Ga. This is a company organized in the interest of C. M. Plowman & Co., the well known Philadelphia cotton yarn dealers. The mill is equipped with both ring and mule spindles for the manufacture of hosiery yarn.

The Barker Cotton Mills at Mobile, Ala., have been sold to the Hamilton-Carhartt Co., according to local reports.

For the greater convenience of their customers, Marden, Orth & Hastings Corporation have just opened an office in Union Trust Building, Cincinnati. The new office has been entrusted to W. G. Rogers who has had fifteen years' experience in the chemical and raw material business.

New England Mill Situation.

The preliminaries of government price-fixing on cotton goods having been concluded the cotton manufacturers are now trying to adjust themselves to the new plans that are being outlined. It goes without saying that hesitation and silent opposition to such a radical change have now disappeared and it is the purpose of all the leading factors in the trade to assist in every possible way in carrying out the win the war plans that are being formulated.

From the inception of the price-fixing agitation a few of the leading New England mill men have contended that more was to be gained by cooperation in carrying out the administration plans than by forcing a situation where legislation for price control might be forced. It is recognized that if there are no statutes to be removed when an armistice comes the trade can readily abrogate its agreements to check the normal forces of supply and demand in the markets, and it will not be long before normal conditions in buying and selling are resumed. To have held out and forced legislation that would control and hobble textiles, might have brought about socialistic legislation of a dangerous character.

Through various trade committees the manufacturers are now at work to have prices fixed on fine cloths, ginghams, prints, bleached cottons, flannels, and many other lines of merchandise that must be harmonized in value with the basis of value fixed on a few sheetings, print cloths, and duck. The yarn committees have held several meetings and have made less rapid progress than cloth handlers but it is understood here that the fixing of a price on raw cotton and the fixing of a price on yarns may be virtually contemporaneous, in so far as it may be necessary to regulate both for the benefit of the manufacturer and the planter. The attitude of the government has been liberal, on the whole, and it rests with the trade to fix differentials.

The outlook for mill profits, wage schedules, and other things has changed in consequence of the government regulation of cloth prices. No one attempts to make predictions as the new plans are so drastic that day to day innovations are expected. The whole scheme is more or less experimental, and both government and manufacturers' boards regard it as simply an esential in helping to win the war and tolerable only from that viewpoint.

Many minor labor difficulties have arisen and wherever they have appeared menacing, the government has been quick to send representatives to call upon both sides to win the war first and discuss minor differences afterward. While the war lasts it seems inevitable that wages and prices will continue in an upward direction but wherever regulation can prevent any interference with production, it will be pressed as hard as the circumstances warrant. Already steps are being taken to prevent continued competition for labor, and union leaders are working to lessen the inevitable friction arising from petty troubles about wage differences in different departments.

Owing to the continued shortage of help in various centers full production is impossible. While some operatives are desirous of extending their summer vacations in consequence of the high wages they are receiving, the slackers are being rounded up steadily and in the face of many handicaps, government work is being turned out quite regularly. The orders that are not being filled promptly are those placed for the civilian trade. Many of these will have to wait for months as the size of the government demand is increasing rather than otherwise. There is a constant growth in the patriotic feelings among workers and manufacturers, and it has been enhanced greatly in the interval by the constant publication of casualty lists in which New England troops have figured prominently as killed, severely wounded, or wounded. The New England divisions of the army, made up of all kinds of young men, have been very heavily engaged, and "slacking" behind the lines has become more than unpopular.

Mill profits up to this time have been phenomenally large as shown in the recurring announcement of regular and special divisions for stockholders. The semi-annual dividend lists were larger of course than anything hitherto known. It is expected that the crest of this wave will be reached in the third quarter of the fiscal year (ending in October), as the new government price basis became effective from June 8 and will affect a very large part of the business done after October 1. The demand for mill stocks has been very active and advances have occurred steadily. While stock brokers are making predictions of still larger dividend disbursements, manufacturers as a rule are anticipating a more moderate policy in view of the certainty that government taxation will be much more extensive and necessary.

Mill building is not going on at all except where some special requirement of the government is being met. The machinery men report a good business so far as they can accept business. From time to time they are called on to set aside regular business to hustle out something wanted by a mill engaged on government work. There is still a demand for machinery for foreign shipment but these orders are receivng little attention owing to the inability to give any sort of guaranty as to delivery dates. Nearly all the machinery concerns are suffering from the steady draft of employees by direct and indirect pressure. The skilled help in the shops is wanted by the government and where it is not engaged on government work the pressure to relocate it is growing firmer.

The reports from the markets show that the country is anticipating much lower cotton goods prices. When the government announcement of price fixing was made at Washington, the report was sent abroad that prices were reduced from 20 to 30 per cent. This was true to the extent that the government basis was substantially lower than the current market quotations. But goods already made were not affected and until they are used the consumer will hardly begin to feel the effect of the new low levels established in manufacturing centres.

All market reports agree that the great rise in values at first hands has been checked and it is also established that speculative operations have been lessened. Some of the buyers who have been profiteering in gray cloths, sheetings, and other merchandise have begun to liquidate their holdings and a re-distribution of stocks in second hands is going on steadily. Some mills have accepted business of a fair volume on 38½ inch 64 x 60s for delivery in the last quarter of the year at 15.51c a yard, the government basis, compared with 19c a yard, the top price of the year. In Fall River, several manufacturers began accepting orders for odd goods to be made, the price to be subject to revision if

the government revision occurs before the delivery is made. In this way business is being resumed again at first hands.

The price set on print cloths, 83c per pound, compares with a value of 99c and $1.05, which had been prevailing. The price on sheetings of 70c a pound, compared with a basis of 92c, the top level. In the interval between June 1, and July 9, when the government announcement was made, trading was very dull at first hands but toward the middle of July it began to show steady improvement.

The government has called for many more goods in the interval. Nearly 24,000,000 more yards of canton flannels, domets, and flannelletes are to be provided for the Red Cross and medical departments. Additional quantities of print cloths and bandage fabrics are called for. The demand for jeans, twills, and drills, seems limitless, and is calling for the full capacity of many of the largest mills. From week to week the mills receive notice to sell no more of one cloth or another until certain government needs are provided for. Under these circumstances it is very difficult to lay out any merchandising plans for civilian requirements and most of the mills are adopting the policy of selling only those lines of goods that are certain to be delivered, and are taking orders for nearby rather than late delivery.

In the absence of definite information about the price basis to be fixed on ginghams and wash fabrics generally, the merchants are showing their lines subject to prices to be named later on. Assortments are being booked, but mills are usually alloting their product, which is limited, among the regular customers, in accordance with the estimates of what may be produced under the most favorable conditions. It is inevitable that civilian deliveries will be cut down and it remains to be seen whether there will be a corresponding decline in consumption. For the moment the demand from consumers is in excess of producing capacity.

The government demand for fine cloths is larger than was anticipated by anyone, either in government service, or in manufacturing circles. Some of the large fine goods mills are sending 60 per cent of their output to various government departments or to customers who have some special work to do for the government. Gas mask cloths, aeroplane cloths, balloon fabrics of many weights, suggest some of the large needs of various government activities. All the heavy colored goods mills have withdrawn a great many of their standard lines from the markets as the government needs for tickings, denims, and special working suit goods or looms on which they are made, make it impracticable to even maintain a representation of the fabrics in the trade.

The demand for cotton blankets and for other napped cottons is far and away beyond anything mills can hope to meet, whatever the civilian requirements may be. There will have to be a decided contraction of consumptive demand for these goods and the government suggestion that old blankets be used and comforters of olden days used in place of the regular lines will have to be followed.

A year ago, had anyone suggested to New England cotton manufacturers that their mills would be virtually under government control and that they would be working heart and soul with the government to see that control effective, he would have been locked up in a hospital. But the actual condition is that there is a grim determination in New England to see this war through to the end and to forget personal convenience and profit in doing so.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, July 20th, 1918.

In keeping with general expectations, returns to the government, as of date June 25th, issued July 2nd, indicated a large crop this year—15,325,000 bales vs. 11,300,000 last year exclusive of linters. The average condition of the crop was placed at 85.8 against 70.3 one year ago, and the increase in acreage was about twice as large as generally looked for—6.2 per cent, or 37,073,000 acres compared with 34,925,000 last year, a gain of 2,148,000 acres.

The effect of the Bureau report on market was reflected in a temporary decline of about 2 cents, but the decline was of short duration owing to the big discount at which new crop options were quoted compared to the value of spot cotton, and because of crop accounts since June 25th from Texas being less favorable.

The situation in Texas is decidedly less favorable than it was one month ago, due to the continuance of a severe drouth in the west and central portions of the state, the want of more rain in south Texas, and because of a prolonged period of excessive heat, maximum temperatures ruling generally above normal the past month. North and east Texas crops, however, are in good condition, having received sufficient moisture for the present.

There was danger of a drouth formation in the Mississippi valley and south atlantic states also, but timely rains the past week over the greater portions of the central and eastern belt afforded the necessary relief for the time being.

A redeeming feature of the recent long dry spell east of the Mississippi river is that it served to keep weevils in check, prevented fields from becoming fouled with weeds and grass, which would have been the case in event of wet weather prevailing, thereby permitting farmers to keep their crops in a high state of cultivation notwithstanding the shortage of labor.

The continuance of the drouth in the southwest, as parts of Louisiana, Arkansas, Oklahoma and the greater portion of Texas, are suffering for rain, has been the sustaining influence in the market of late, as has the more favorable war advices from the western front in Europe.

This season's consumption of American cotton by the world points to only about 12,000,000 bales vs. 14,046,000 last season, whereas last year's crop, including linters, was about 12,500,000 bales.

Notwithstanding the severe drouth in Texas, prospects are that Texas will make more cotton than she made last year when that state produced about 3,500,000 bales, and as indications are for a large crop outside of Texas this year, perhaps 2,000,000 bales in excess of last year, the outlook is for a much larger crop for next season than the world will be able to use if the war continues another year, due to lack of tonnage for commercial purposes.

If the situation in Texas is relieved soon by general, generous rains, prospects there would be improved materially, as the damage done so far is not irreparable, except, perhaps, in west Texas where the drouth conditions are serious.

The breaking of the drouth in Texas, if realized short-

ly, would likely give the market a sharp setback, perhaps an important decline, as prospects are for an early and large movement of new crop cotton, not only from south and central Texas, but from other sections of the southern half of the cotton region.

Gradually the old crop is losing its influence as a price making factor, more consideration being paid new crop possibilities. Already the value of old crop spots are feeling the depressing influence of the probability of heavy offerings of the new crop, which will likely increase in the near future.

Ordinarily foreign buyers would be in the interior in large numbers waiting to purchase the first receipts of the new crop. This year reports from Texas are to effect that there are few buyers to care for the early arrivals of this year's production, which would indicate a downward trend of prices as the new season approaches, providing climatic conditions improve in Texas and if there are no indications of peace.

The Yarn Market.

The yarn market for the past month has been in a rather comatose condition. This was doubtless partly due to the holiday period in the early part of the month, and partly due to the fact that it is the vacation period for many people, who even if they do not take a complete vacation, extend their week ends somewhat and transact the smallest amount of business necessary during the middle of each week. Still another factor in the general dullness was caused by the price fixing uncertainty and the variations in raw cotton prices which seemed to have some indications toward a radical reduction. In many cases, also, the fiscal year of the firm closed on July 1st and this necessitated stock taking and similar inventory work.

Railroad congestion is being relieved somewhat and yarns are coming into the northern market that have been on the road for weeks and in many instances side tracked in nearby terminal yards for long periods. There have also been a number of complaints because of the lack of suitable notification from the railroad officials of the arrival of yarn. One typical case of this was by a Philadelphia dealer who was notified by post card that the yarn had arrived for him and would be put in storage unless removed by June 20th. The card was dated June 25th and received at his office June 26th and was the first notice that he had received from the railroad that the yarn was in the freight yard or in a postion where he could secure it.

Early in the month combed yarns were very quiet and while there were some good inquiries for carded yarn on cones they were not at prices that seemed attractive to the majority of dealers. Users of carded weaving yarns were not in the market to any extent during this period and were not even making inquiry for course numbers for quick deliveries.

The middle of the month found yarn prices showing stiff advances and the report that southern frame spun carded cones were listed by the price fixing committee on the basis of 60c for 10s with an advance of ¾ of a cent a number up to 22s was considered altogether too high by some of the buyers. However, some sales were consummated on the basis of 60½c to 62c for 10s and 14s cones sold for 63c to 64c.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

4s to 8s	63	@64	10s	65	@65½
12s	65	@66	14s	66	@67
16s	67	@68	20s	72	@73
24s	74	@75	26s	75	@76
30s	78	@79			

Southern Single Warps.

8s	63½	@64	10s	66	@66½
12s	66½	@67	14s	67	@68
16s	68	@69	20s	72	@73
26s	75	@76	30s	82	@83
40s	88	@89			

Carpet and Upholstery Yarns in Skeins.

8-4 slack	66	@67	9-4 slack	67	@67½
8-3-4 hard twist	65	@66			

Southern Two-Ply Skeins.

8s	64	@65	10s	66	@67
12s	69	@70	14s	73	@74
16s	74	@75	20s	75	@76
24s	77	@78	26s	79	@80
30s	80	@81	40s	91	@92
50s	$1.00		60s	$1.05	@$1.10

Southern Two-Ply Warps.

8s	65	@66	10s	67	@67½
12s	74	@75	14s	75	@76
16s	75	@76	20s	74	@76
24s	77	@78	26s	78	@79
30s	80	@81	40s	91	@92
50s	$1.00				

Northern Two-Ply Carded Peeler Skeins.

20s	81	@82	24s	84	@85
26s	85	@86	36s	90	@91
50s	$1.10	@$1.12			

Two-Ply Combed Peeler Skeins.

20s	80	@81	24s	83	@84
30s	85	@86	40s	97	@$1
50s	$1.10	@$1.15	60s	$1.20	@$1.25
80s	$1.50				

Southern Frame Spun Carded Yarn on Cones.

8s	61	@62	10s	61	@62
12s	62	@63	14s	62½	@63½
16s	64	@65	18s	66	@67
20s	64	@66	22s	64	@65
26s	69	@70	30s	69	@70
40s	86	@88	30s tying-in	67	@68

Northern Mule Spun Carded Yarn on Cones.

10s	65	@66	12s	66	@66½
14s	66½	@67	16s	65	@67
18s	66	@69	20s	67	@69
24s	69	@70	26s	72	@73
30s	74	@75	40s	89	@90

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	75	@76	12s	76	@77
14s	77	@78	16s	78	@79
18s	79	@80	20s	81	@82
22s	82	@83	26s	85	@86
30s	88	@89	36s	91	@92
40s	95	@96			

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

On June 10th a new order of the Cotton Control Board came into force and imposed upon the trade by far the severest restrictions it has yet suffered. The Board itself described its new scheme as "somewhat drastic measures," but justified them by the "very critical nature of the present position." At the end of May the Board took a further census of cotton stocks and the result, the trade was informed, "disclosed a very poor position even at the moment, whilst unless more tonnage is available a much more serious situation is inevitable in the near future."

In a preface to the details of its scheme the Board stated that it was not so much the actual statistical position existing at the time that was alarming, because if it had been possible to maintain imports of cotton at the level of the first quarter of the year, the trade could have continued to work as before, but unfortunately the future

supply was most uncertain and indicated "a dangerously low level," unless prompt measures were enforced to reduce consumption. The Egyptian stocks were better than the American, and had it not been for the substitution of Egyptian for American cotton which the Board had encouraged, resulting in a 50 per cent increase in the consumption of the former, it might have been feasible to continue running a hunderd per cent of Egyptian spindles. The Board recognized that the serious crisis had arisen from no fault of either employers or operatives but was "an inevitable outcome of the war." The gradual diminution in the supplies of cotton, the shortage of available tonnage, accentuated by the country's requirements in food and munitions, and finally, as a culminating factor, by the tremedous demand for men from America and their necessary equipment, had forced upon the whole of the trade a time of mutual trouble and distress, which nothing but "give and take" could see through without "grievous loss and difficulty."

Under the new scheme not a single spindle or loom may be run without license from the Board. Mills on Egyptian, Sea Island, Surat cotton or waste may run up to 80 per cent of their spindles for the normal week of fifty-five and a half hours, but mills on American may not run more than 50 per cent of their spindles and then not for more than 40 hours per week. No firms spinning American on May 18th were allowed to change to Egyptian or other finer sorts after that date. Levies have to be paid on those above certain percentage. The levies on Egyptian and the finer counts generally range from a farthing per spindle to one penny according to the number run, and on American from one-eighth of a penny to one halfpenny. The only cases in which mills may be allowed to run above the hours or the limit of machinery specified, are those in which they are engaged entirely, or almost entirely, on Government work.

No weaving shed is allowed to run for more than forty hours per week unless it is engaged entirely on Government work or waste cloths. On looms up to and including 72-inch reed space the levy ranges from three pence to one shilling and threepence per loom, according to the number run. For looms above 72-inch reed space the levy is double these amounts.

The whole of the operatives in the trade have received an advance of 25 per cent, bringing the advances in wages granted during the war to 60 per cent. The recent advance, according to custom, is based on the standard price, and on actual earnings means an increase of from 15 to 18 per cent. Nevertheless, it is the biggest advance conceded during the war; indeed, the biggest in the history of the trade. The negotiations were protracted, and it was largely due to the efforts of Sir Herbert Dixon, the chairman of the Cotton Control Board, who acted as an intermediary between the parties, that a settlement was reached. A condition of the settlement was that the Board should continue to make such levies on the employers as would enable it to pay out-of-work grants to the operatives at the same rate as hitherto. Since the inauguration of restricted production under the Board in September last, a very large sum of money has been paid in levies by the employers. No complete figures have been published, but the Weavers Amalgamation has stated that, up to the end of March, the amount paid in unemployment benefit on behalf of the Board through the weavers' organization was over £500,000. In the same period the amount paid through the spinners' unions was £100.000.

The future of the Control Board in view of the after-war situation is being discussed. Already it has been enlarged as a consequence of the decision of the Board of Trade that it shall act as an advisory committee for the cotton industry during the reconstruction period, and Sir Charles Macara, in the "Cotton Factory Times" has put forward the view that the Board should be a permanent institution. He says:

> Here we have the principle at work which for years I have so strongly advocated and which was embodied by Government sanction in the Industrial Council—the principle of a tribunal, representing all classes in an industry and charged with the responsibility of watching the interests of all, employers and employed, in the industry. The secret of the noteworthy success of the Cotton Control Board in the primary duty for which it was called into existence—the safeguarding of the great cotton industry in this country in this time of national stress and strain—is in placing the whole rsponsibility on the shoulders of those who have eminent qualifications for the work, and in whom the representatives of all branches in the industry have every confidence. . . . . I do not propose to interfere in any way with our cotton organizations. They will continue, I hope, to serve a good purpose in watching the interest of our industry in all departments. But the Cotton Control Board has taught us a valuable lesson for the future. To my thinking, it will be a great mistake if we allow that Board to dissolve when the war is over. We do not desire Government control one day longer than is absolutely necessary, but the composition of that body is such as might bring more peace and greater prosperity to the cotton trade in years to come—an advisory body which shall be able to speak for the whole industry, which shall possess the full confidence of all interested parties and to which any dispute between the oraginzations directly concerned with one class of operatives or one branch of the industry may appeal, as to an independent tribunal, for an award on any question which might threaten trouble. We must never lose sight of the important fact that a quarrel in one section of the trade will almost immediately affect every other department of the trade. This danger demands a unity of control. I have followed closely the work of the Cotton Control Board and I claim that it has brought the employers and operatives together as no other organization has done. We were perhaps a little suspicious of it at first but the longer our acquaintance the firmer is our confidence in the ability of its members to carry us successfully over our present difficulties, and when freed from its responsibility to Government I maintain that industry generally would gain immensely if it were to retain such an institution as the Industrial Council of the Cotton Trade, with the power to enforce upon the whole industry any decision reached by three-quarters of the representatives of capital and Labor in that industry—a mode of procedure recommended by the Industrial Council in 1912."

It is due to Sir Charles Macara to say that his suggestion came before the announcement of the Board of Trade that the Control Board would be constituted as an advisory committee after the war, a proposal which, though by no means identical, is somewhat similar. As to the practical value of Sir Charles' proposal, I think he overestimates the likelihood of getting the trade to consent to place itself in the hands of any body with such compulsory powers as he outlines. Compulsory arbitration has never been liked by anyone in the cotton trade and the operatives would certainly resist. It is undoubtedly true that the Control Board has met with a very large measure of success and has steered the industry through difficulties which, at various times, seemed to threaten absolute wreckage. It has to be remembered, however, that the Board has the whole weight of the Government and the Defence of the Realm Act behind it, and though the general opinion has been that

(*Continued on page* 709.)

COTTON MANUFACTURING.

Yarn Mill Organization and Efficiency.

BY S. A. FORD.

WHAT IS EFFICIENCY.

One of the first questions usually asked is, "What is efficiency?" What form does it take? Is it something you can put your hand on and work it up with tools and frame it like a house and when it is finished set it up in your business and say, "There! I have efficiency"? Or is it something like a dose of medicine that we take when we are run down and don't feel up to scratch?

No; it isn't anything of that nature. Then what is it?

At its birth efficiency is a state of mind. It is a fair and square, out and out, honest to goodness admission on your part that there may be a better way of making yarn than that you are now using in making it, that there may be a more efficient way, and that somebody other than yourself may have some ideas that are better than yours. Coupled with this admission must be a firm resolution to seek out and investigate, from whatever source, these new ideas and methods, to give such ideas a fair and square trial with a jury open minded and free of prejudice, to give all credit where credit is due, to adopt the methods which prove the best after a fair trial, and to use such methods until such time as still others are found which prove more efficient.

This is the second of a series of articles by Mr. Ford on yarn mill efficiency. His illustrations, based on actual cotton mill experiences, make these articles especially attractive to the practical mill man. Take the question home to yourself; do you come within Mr. Ford's definition of the efficient man "who tempers the cold reasoning of the scientific man with the experience of the practical man and seasons the whole with common sense, good judgment and fair play, and who finally arrives at a working solution that will stand the test of efficient practice and good business?"—Editor.

Efficiency means doing things in the best way with the least effort, the least expenditure of brain and energy, the least fuss and the least waste.

Some people think this requires a really scientific man such as a high-class astronomer or a mathematician. Others think a stop watch, an elaborate system of reports where a man has to sign a requisition before he can turn around, elaborate filing systems and cabinets, and a time clock that everybody must punch, are all that are needed to get efficiency. But just as sure as a hammer, axe and saw do not make a carpenter, neither do such things as stop watches, filing cabinets and time clocks make efficiency. But they are the tools of efficiency just as the hammer, axe and saw are the tools of the carpenter.

Others consider efficiency just as a tool of the employer to get something for nothing and a whip to drive the employee. Nothing is further from the truth. If the employer really means to have efficiency and really looks for ways and methods to get it, then one of the first things that will pop up and hit him squarely between the eyes is that efficiency means a square deal for all, employees and employer.

It means that the employer is entitled to a fair day's work and that the employee is entitled to a fair day's pay for his day's work.

This brings up the question as to what can be considered a fair day's work, and that is *some question.* Like that question in regard to the age of Ann, the solution is a little unsatisfactory in a large number of cases.

But industrial efficiency endeavors, by means to be described later, to find what a fair and square, honest day's work should be under certain given conditions, and, after determining upon this fact as a basis, instructs the employee how to attain this standard, offering inducements of an increase in earnings to get the employee to strive to reach the standard. Under efficiency management such problems are approached in a co-operative spirit with the idea of giving the employee his just share of the savings made.

For years, certain jobs have been considered a day's work. When a man had done the work the job required, then his day's work was done. Some of these jobs really are a day's work and some are only a small part of a day's work. Is there any justice or equity for the man who does a full day's work as compared with the man who does a part of a day's work for a similar wage? And yet each man will consider that the other fellow is entitled to all he can get and the man who does a real day's work will say the other fellow is just a little luckier than he is, that's all.

But efficient management says that the employee shall give the employer a fair day's work and that the employer shall give the employee a fair wage for his fair day's work. And so these jobs will be re-arranged and combined with other jobs so that each man will really do a fair day's work.

I worked in a large cloth mill as a boss carder; in fact, it was my first boss carder's job. Each day all the overseers were called to the cloth room for a meeting to look over the bad work, "chew the rag," and "pass the buck."

This was my first introduction to that game of "passing the buck," a game peculiar to the cotton mill and played today as much as ever in some plants. I was young and inexperienced at the game and the way some of the older overseers put it onto me was a treat. Why, nothing ever went wrong in the spinning, preparing, weaving and finishing rooms. It was all up to the carder, and some of the methods used in putting it onto the carder were very ingenious. I seemed to be a pretty good goat. For about four months I don't believe the card room could have produced a good bobbin of roving from an account of the seconds that were

put onto us. And the superintendent allowed the spinner, slasher, weaver and finisher to "pass the buck" and get away with it.

Now, the point is here. Some of that bad work was up to the card room—no doubt about that at all—but not all of it. Efficient management would have put the blame where it belonged. Some system of check on quality would have shown just where the trouble was and would have pointed out the guilty person.

This superintendent needed checking up just as much as the rest of us. Any superintendent who allows his overseers to "pass the buck" and get away with it, isn't onto his job. Probably some one will say that all this could be done without efficiency or scientific management, but it wasn't done until a reorganization was made and efficiency principles installed at the plant.

I have lately been told that these daily meetings take place around the conference table and instead of being a "rag chewing" contest for the overseers, they are meetings where industrial teamwork is the watchword and where it is only necessary to go to the clothroom once a week to look over bad work.

Efficiency means more than motion studies, or endeavoring to speed up workmen. It means anything and everything that tends to make a dollar's worth of material, or time, or effort, yield more results than it ever yielded before.

For every process or result desired under given conditions there is one best way to obtain the result, and only one way. There is no way just as good as another. There is some one way that is better than all the others, and efficiency searches and eliminates until this one way is found, and then says that this way shall be the standard and all work shall be done according to this standard.

Industrial efficiency says it is not enough that a certain thing has always been done in a certain way. That is no reason why it is the best way.

Efficiency demands progress. Progress means change. Change means study. Study demands thoughts of the future and a knowledge of what changes will produce. This requires a knowledge of the most minute details of the business and a constant checking of these details with a system of daily reports and cost records.

Such work as this brings us in contact with the practical man and the rule of thumb man who have certain rules that they always apply to certain cases and who know a thing is so and so because they know it and that is all there is to it.

Then there is the scientific man who applies cold hard reasoning to a problem and with the aid of certain formulae of applied mechanics and mathematics determines on a certain solution without regard to its working features or influence on other matters.

Again, there is the efficient man who tempers the cold reasoning of the scientific man with the experience of the practical man and seasons the whole with common sense, good judgment and fair play, and who finally arrives at a working solution that will stand the test of efficient practice and good business.

The science of efficiency endeavors to make each machine produce and earn more dollars than it earned previously, but in doing this, conditions must be taken into consideration and very often these conditions are such as to cause the methods adopted to be called a little off the line of what is considered good practice. For instance, let me illustrate with the following incident:

After organizing and balancing a mill making cotton flannels, it was found that there was a small ring spinning room that could only be supplied by a few roving frames. The spinning frames made 18's yarn for filling. The roving frames should produce about a 4.00 hank roving, which doubled and drafted 9.00 would produce 18's yarn. But the roving frames available could not keep these spinning frames running if they produced 4.00 hank roving. The management insisted that all of the frames should run and supply the looms with filling and that the looms should not be stopped for want of filling. They refused to spend any money for new equipment at that time. Therefore, it became a problem of producing enough roving to keep this spinning room running with a limited number of fly frames. It was found that 2.00 hank roving from the speeders would give the production. The 18's yarn was therefore spun from single roving, 2.00 hank, with a draft of 9.00.

Samples were woven and finished and submitted to the management, but they would not accept them. The cloth finished uneven and showed a sort of corded effect in the direction of the filling. Experiments were then made, one of which was to spin 18's filling from 2.00 hank doubled in the creel with a spinning draft of 18.00. Cloth woven from this yarn passed inspection and after repeated tests it was decided to spin this yarn from 2.00 hank roving doubled, and for 18 months this was done until new fly frame equipment was bought and installed.

Here was a case where certain rigid conditions must be met and they were met in the way that experiment showed to be the best and most efficient. And that way called for a draft twice as long as was considered good practice. I do not mean to say that this yarn was the best yarn that was produced, considering the yarn only, but it was the best yarn that was made in quantities sufficient to keep the looms running and make salable cloth.

Much just criticism and a lot of unjust criticism has been made of scientific management. It has been said that there is a lot of "con" in this economy talk, and that the efficiency idea is about all "fish." There are some men whom we will call "quacks" that are hurting this movement just as they have hurt all other movements, but in spite of all these obstacles, scientific management is the biggest thing of the times industrially. As proof of this both big and little businesses are taking it up.

There have been failures, and I speak now of plants where the systems have been installed by engineers. Some of these failures can be laid at the door of the engineers themselves, but a large percentage of them are directly up to the management of the business involved.

Great as the science of management is, it is not all. The science of man is greater. Science has placed itself upon a pedestal and considered itself above the average man. Science approaches a problem with cold, hard reasoning and after observation decides that Tom should do so and so. Because Tom is able to do it, then his co-workers Dick and Harry should be able to do it, and the production should be three times what Tom produces. But they dont get it be-

cause they have not considered Dick and Harry as Dick and Harry, but as two other Toms. *As big as scientific management is, the individual is bigger.* The study of the individual and the ways and means of getting out of the individual the power stored within him, is the greatest problem facing the manufacturer today. Industrial efficiency is simply one way of trying to develop this power and make use of it industrially.

The cotton business, consisting to a large extent of machine operations, in some ways does not offer as large a field for the development of industrial efficiency as some of the other arts and trades. And yet, even in cotton mills, wonderful improvement has been shown by making use of the principles of efficiency.

In the attempt to install efficiency methods, obstacles are bound to be encountered. The most pronounced and the most persistent opposition comes from the help and the labor unions. Labor unions on general principles are opposed to anything that treats with workmen as individuals. This is only a natural result. Workmen formed unions because they found that by combining and using their combined influence and strength, they were able to get certain concessions that they could get in no other way. There are hundreds of union men who do not believe in the methods of the union and yet say that if it were not for the unions they would not be getting as much pay nor working under as good conditions as they now enjoy. Unions have helped the workman. It cannot be denied. And the unions got concessions because they represented a class of workmen, a large number working as a single unit. Is it any wonder, then, that they are suspicious and distrustful of any movement that would deprive them of their power and influence as union men?

Workmen formed unions because it was to their advantage to do so. Now, if they should find it *more to their advantage* to disregard their unionism, they would choose the course most to their advantage. It might be hard to convince men it was for their best interests to disregard their connections with the unions, but it has been done.

Employers forced men into unions and they must show men where it is to their advantage to forget the unions. I do not mean to advocate the abolishment of labor unions, for they can be made to serve a very useful purpose. However, looking ahead, I can see where most of the privileges and increases of wages are going to come to the workmen through their own efforts rather than through class influence, because of the introduction of efficiency principles.

Lack of a proper appreciation of the principles of efficient management through ignorance is another big obstacle to the introduction of efficiency principles. This prejudice is overcome slowly by working on an individual and showing the workmen that no one is going to get hurt and no one exploited for the benefit of the employer. It is, therefore, desirable and very essential that a beginning be made somwhere in the organization where only one man is affected. Where changes affect a large number of workmen they should be made at points where they show that these changes are a benefit to the workmen and the employer as well, for it is very essential that these benefits be mutual.

The next question liable to be asked is whether it is necessary to install all of the features of industrial efficiency and if it can be done by the management itself or must it be done by outsiders?

Answering the last part first, I should say that the best results are obtained by home talent. It may take longer, but the changes are made after more consideration and thought have been put upon them and they are more liable under these circumstances to be taken in a better spirit and become general practice.

As to whether it is necessary to include all of the features of industrial efficiency, I will say that it is not necessary and even not advisable in a large number of cases. Especially is this true in the small plant where the number employed is so small that it would not pay to install a complete system. I know of plants where complete systems were installed by engineers and today, after four to six years, some of the features have gradually been dropped, as it was found that they were not necessary.

Just how far to go is determined by the point of negative returns or the point where the cost of getting larger returns is greater than the returns. In other words, industrial efficiency should be carried as far as it pays and no farther.

Lancashire Notes.

(*Continued from page* 706.)

its measures have been the soundest that could be proposed in the circumstances, it has undoubtedly been greatly helped by the disposition to give and take to which the war has given rise. In the days of peace such despotism as the Board exercises—and although thoroughly representative in character it is certainly in its essence a despotic body—would not, I think, be taken at all kindly. Employers and employed might then kick over the traces about things which today they grin and bear.

The committee appointed by the Board of Trade to consider the position of the textile industries after the war has now reported. It recommends that "every possible effort" should be made to secure a more extended growth of cotton within the British Empire, and to assist this end suggests that a standing advisory committee should be appointed. The duty of this committee would be to investigate in all its bearings the question of increasing the Empire's cotton supply, to act as a clearing house of information and generally to assist and advise the Government. The report also suggests that representations should be made to the Secretary for India urging upon him the immediate need for an acceleration and extension of the "excellent work" already done by the Indian Agricultural Department. As regards "key" industries affecting the textile trade the committee recommends that immediate steps should be taken by the Government to ensure the establishment and maintenance of the manufacture of dye materials and knitting needles

Touching the question of British cotton reminds me that it has been reported to the British Cotton Growing Association that the crop of long-staple American cotton grown in the Zaria district under the direction of the Government Agricultural Department is now practically all bought. The association's purchases amount to over 800 bales, as compared with 462 bales last year. A good deal of this cotton has also been used locally and there is every reason to believe that the cultivation of this type in Northern Nigeria will continue rapidly to increase.

Dyeing, Bleaching and Finishing.

Calender Finishing.

BY WILLIAM B. NANSON.

Printed drills for dress goods. These goods are 32 inches wide in the grey and require to be finished 30½ inches. The organization of these goods is 92 x 56 and their weight is 4.45 yards per pound. After bleaching, dyeing and mangling, drying up and cooling off, the goods are hot swissed on the five bowled calender under a medium pressure, they are then starched as follows: 44 pounds of white dextrin, 66 pounds of corn starch, 1½ gallons of oleine oil, and ¼ pint of carbolic acid. Make into 100 gallons and boil 10 minutes. After starching and drying, cool off, condition on the sprinkler, and let the goods lie for two hours. Calender cold on calender Fig. 1 composed of two wooden and one steel bowl, use a medium to light pressure and stretch goods to width on clip stretcher.

Plain cloth for fine dress goods. These goods are 36 inches wide in the grey and require to be finished 34 inches. The organization is 80 x 64 and the weight is 5.50 yards per pound. After bleaching, dyeing, mangling, drying and cooling off, the goods are swissed on the swissing calender with a medium heavy set and a high temperature, using a five bowled calender. After calendering, stretch on a belt stretcher then starch with the following mixture: 100 pounds of white dextrine, 20 pounds of potato starch, 3 gallons of oleine oil, 6 pounds of tallow or bone grease, and ½ pint of carbolic acid. Make into 100 gallons of starch, boil 10 minutes.

After starching, drying, cooling off and dampening on the sprikler, swiss on a five bowled calender, cold and under a light pressure, stretch to width on either clip or belt stretcher.

It will be noted in many of these mixings that white dextrine is called for. Soluble starch and white dextrine are very valuable agents in the hands of the finisher. With these substances he is able to produce a greater variety of finishes than with any other ingredient he uses. Being soluble, they form a thin liquid when boiled with water, which penetrates the fibre of the cloth instead of remaining on the surface, as is the case with starch. They also have the property of causing starch to boil thinner than when it is boiled in water alone. This is an advantage where it is required to give a thick leathery feel to low class goods in which, for certain reasons, china clay, or other minerals are not permissible ingredients, as it permits more starch to be used to a given quantity of water without producing a mixture too thick to be used or making the goods too stiff, in other words the tendency is to fill and add weight and not to stiffen, and that is why so many of these recipes call for both white dextrine and starch.

In some of the earlier mixings given in these articles, it will be noted that the mixing calls for starch first boiled and then made soluble with diastafor, this makes it into soluble starch and is practically the same and may be used in place of the white dextrin. In this way one or two pounds of diastofor will serve to convert 100 pounds of ordinary starch into the soluble variety.

Oxford shirting (fine woven stripes). These goods are 29 inches wide, and require to be finished 28¼ inches. The organization is 96 x 44 and the weight is 5.10 yards to the pound. These goods are finished direct from the loom. They are damped well on the sprinkler and then glazed on the friction calender using a medium pressure and a high temperature.

Cotton damask, linen finish, is also finished direct from the loom. Sprinkle and let lie for two hours, mangle on hydraulic mangle, change ends and mangle again until all water marks are erased, sprinkle again and swiss on a five bowled calender using heavy pressure and a high temperature.

Striped sateens (dress goods). These goods are 28 inches wide and require to be finished 26½ inches. The organization is 156 x 82 and the weight is 6.80 yards to the pound. After mercerizing, bleaching, dyeing, mangling, drying and cooling off, the goods must be lightly damped and allowed to lie two hours. They are then calendered on a five bowled swissing calender, using a medium pressure and heat. They must then be stretched to the required width on a clip stretcher. This last operation, besides stretching the goods to the required width, breaks up any stiffness which the hot calendering may have caused; it will be noted that no starch is used on this or any of these latter recipes.

Pocketing finish, bleached. These goods are 33 inches wide in the grey and must finish 31½ inches. The organization is 76 x 60 and the weight is 4.10 yards per pound. After bleaching and mangling the cloth is dried on the drier, cooled off, damped and layed down two hours, calendered on five bowled swissing calender, using a light pressure and medium heat, i. e., about blood warm. Starch on the regular two bowled starch mangle with a 10 pound weight on each lever using the following mixture: 200 pounds of white dextrine, 80 pounds of corn starch, 7½ gallons of oleine oil, ultramarine blue to shade, and ½ pint of carbolic acid. Make up to 100 gallons of starch. Boil 15 minutes. After starching dry up and cool off. Damp on sprinklers and let lie two hours. Then calender on five bowled swissing calender cold, all cotton bowls, using a heavy pressure. Stretch to width on clip stretcher.

There are many qualities and grades of pocketing, some are filled with clay on the back and others are all low goods, and finishers do not take much pains with them as a rule. Bleach, starch, damp, and calender is about all they get, and that in any old way. But if the reader saw the pieces of pocketing just described finished in the usual way and laid side by side with the piece finished in the manner described in the more elaborate way, he would feel and see the difference and would be brought to fully realize that the long way was justified and worth it.

It is highly injurious to calenders to allow them to run empty under heavy pressure as the bowls are liable to become scorched and hardened by contact with the hot metal

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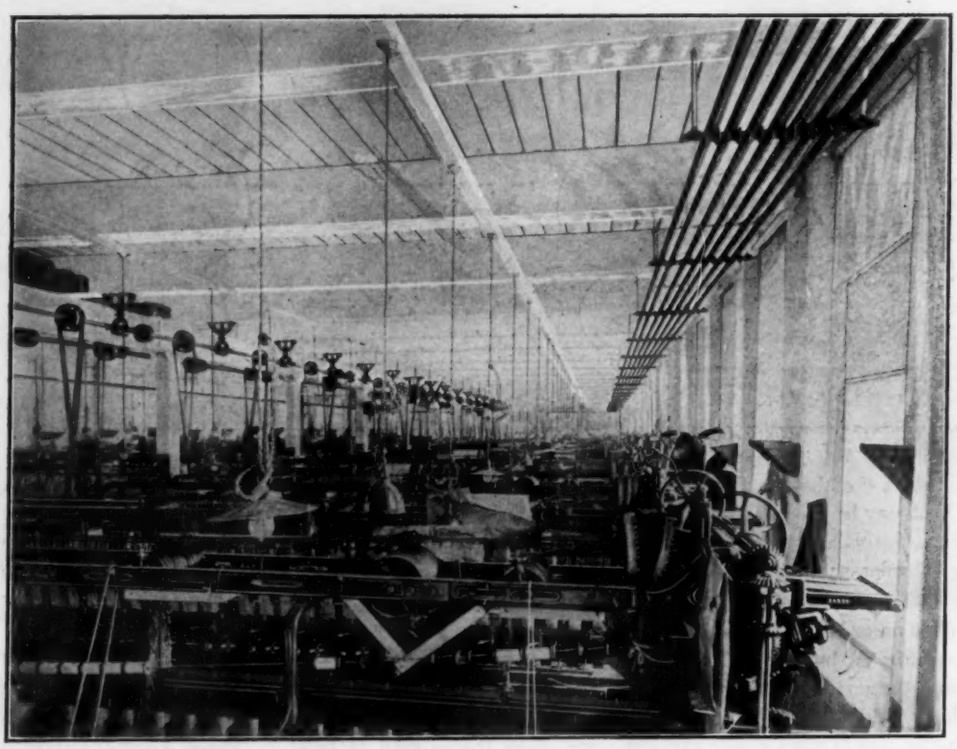

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bowls. They are also liable to become very dirty. As soon as the calender is stopped the pressure must be instantly removed and the bowls raised, by means of the set wheels and stirrups, from contact with each other, or the cotton bowls will become flattened at the point of contact or nip, a condition which would soon damage them beyond repair and render them quite unfit for finishing purposes. Good, well kept bowls, mean good finishing. If the bowls require washing, always wash them while hot, being careful always that they are not allowed to get too wet.

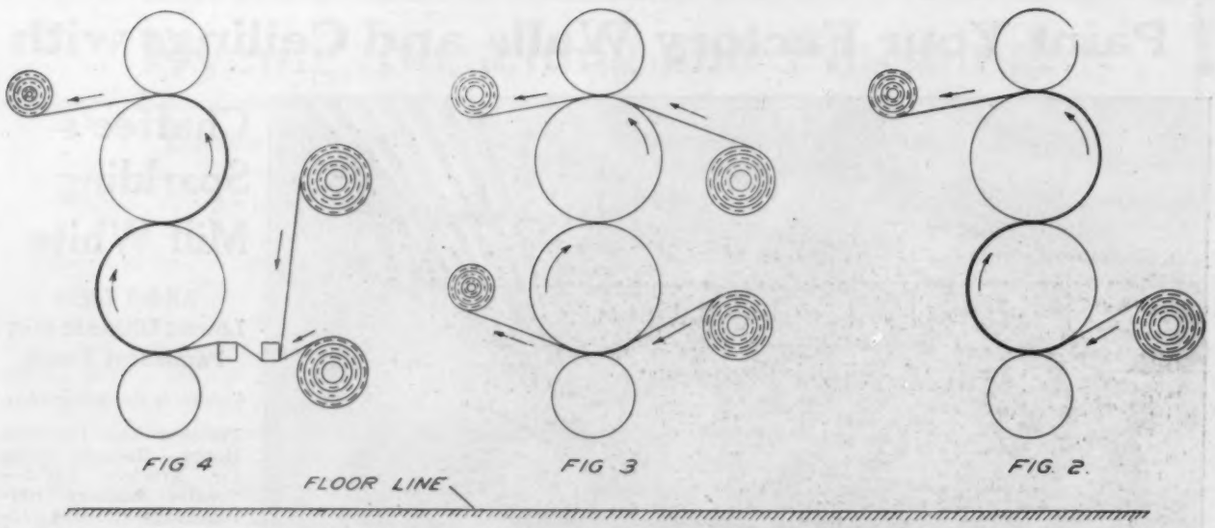
A dead set pressure is usually found, and is preferred, for such calenders as three bowled swissing calenders and friction calenders, but compound lever pressure is usually preferred for calenders containing four or more bowls. These latter calenders should be fitted to also work, however, as dead set calendars, if so required, by locking the levers by means of pins known as dead set pins.

Calenders may be driven direct from the main line but care must be taken that the clutch or belting by which driven be sufficiently powerful for the purpose and it requires a lot of power to overcome the inert resistance of a heavy calender when at rest and get it into motion. Direct engines of the double cylinder diagonal type, or, electric motors have the advantage as a motive power as they permit of a variety of speeds, as well as a positive means of starting the machine. This variety of speed is quite convenient for some finishes, and by thus having the speed under control it is also very handy for threading up.

Generally speaking, five to nine bowled swissing calenders are built with a bottom bowl of iron of a large diameter and in the case of heavy calenders the top bowl should also be of large diameter.

There is a patent four bowled double friction calender on the market which is built with a peculiar arrangement of friction wheels which permit the cloth to be glazed on both sides at one run. The bowls of this calender are arranged as shown in Fig. 2 in which the top and bottom bowls are the friction bowls of chilled iron and the two middle bowls of cotton; the diagram shows the goods being glazed on both sides. This calender may be used for glazing on one side only in which case two pieces may be run through the machine simultaneously as shown in Fig. 3. This arrangement will give, theoretically, double the production of the common three bowled friction calender but its limitations and objectionable features are too obvious to need discussing with the average calender man. It may, however, be used to some advantage in producing watered effects on cotton goods such as are obtained on moireens, moirettes, etc., which are glazed on the back and watermarked on the face. The procedure is as follows:

Moireen. This cloth is used for skirts or petticoats. These goods are 40 inches wide in the grey and must finish 37½ inches. The organization is 48 x 96 and the weight is 3.12 yards per pound. After mercerizing, dyeing, mangling, drying and cooling off, the goods are damped well on the sprinkler and allowed to lie and condition for two hours. Two batches of the cloth are run together face to face through a friction calender. After the first run on one side the goods are turned and glazed on the other side, still leaving the two pieces face to face. The result of these two runs is to produce an equal glaze on the back of both pieces.

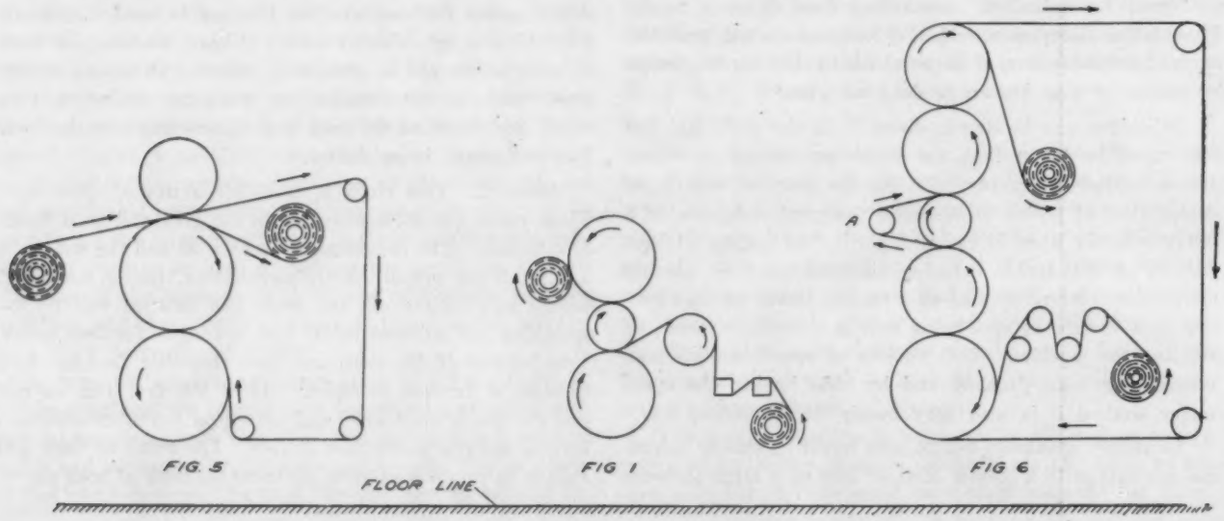


When they are pulled apart the face of both is found to be beautifully watered. This effect may be produced at one run on the four bowled patent friction calender previously described. Fig. 4 shows this calender running two pieces of moireen together.

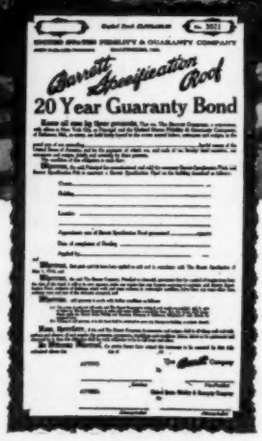
This finish may also be done on ordinary three-bowl friction calendar by chasing (see Fig. 5) but the watermark is not so clear and distinct, and the goods are not glazed on the back as the friction bowl acts upon the face of the goods the first time through, the face is more glossy and less watermarked than when two pieces are run face to face This chasing finish is much used on hollands, window shades, rustle linings, and percalines.

Some idea of the principles underlying the operation of moiring, or watermarking may be had by holding two thicknesses of some open woven fabric, such as muslin or gauze up to the light. If this is done a water mark or moire design will be made distinctly visible. This design is caused by the irregular superimposing of the threads of one fabric upon those of another. If a cloth be woven from a coarse or hard yarn in the warp or filling, or if it be of a ribbed texture and two or more layers of it are subjected to pressure, one upon the other, either in a press or in a calender, it will be always found, that where the threads cross each other distinct impressions will be found on both pieces. Each fabric, when examined separately, will show a similar design to that which was apparent when the two layers were held before the light. From this it may be inferred that the organization of the cloth has much to do with the clearness and distinctness of the water mark. As a matter of fact it has a great deal to do with it. Some makes of plain goods show a very poor watermark.

A careful examination of the impressions on the cloth will show that a kind of twist is pressed upon the threads wherever they cross each other. This twist is more or less elongated according to the angle at which the crossing is made, and the impressions will be more distinct the coarser and harder the threads are. Those threads which are not crossed will lie parallel, or, fit between the threads of the opposing fabric, and produce the so-called thready appearance and lustre. Watered effects will appear on any kind of woven goods when they are pressed together in two or more layers and many times this is more of an objection than an improvement, as is the case with imitation beetle finish and linen finish. For this reason it is essential that the principles governing the production of watered effects on cotton piece goods should be thoroughly understood, so that they may be either produced or avoided as desired.



Roofing Contractors: United Roofing Co., Albany, N. Y.



Forty Years of Service—

Forty years ago when the now huge plant of the Harmony Mills was built at Cohoes, N. Y., the roof was laid along the lines now advocated in The Barrett Specification.

After forty years of hard service, when the matter of re-roofing came up recently the old roof was found to be in such good condition that *it was a question whether to repair it or lay a new one!*

The management decided that the old roof had given them their money's worth and ordered a new one like it, under its modern name, *a Barrett Specification Roof.*

Is it any wonder, in the face of this kind of service, that we are able to give a 20 Year Guaranty Bond on Barrett Specification Roofs?

Not that they need a Guaranty Bond to make them last: the Bond is merely an expression of our definite knowledge that Barrett Specification Roofs will last much longer than twenty years.

Read what the owners of the Harmony Mills have to say about their roof:

"* * * the original roofs laid along the lines of The Barrett Specification were applied on our mills about forty years ago, and have served us satisfactorily during this period.

"On the basis of such service, we are convinced that a Barrett Specification Roof is not only superior to, but more economical than any other type of roofing.

"Therefore, we decided to reroof our mills with Barrett Specification. The re-roofing work is, of course, well on the way to completion and we are pleased to advise that we consider your supervision over the application of great value. We shall be glad to receive expression of your confidence in the roofing in the shape of your Twenty-Year Bond.

(Signed) "John A. Perkins, Agent."

The 20-Year Surety Bond

We now offer a 20-Year Surety Bond Guaranty on all Barrett Specification Roofs of fifty squares and over in all towns of 25,000 and over, and in smaller towns where our Inspection Service is available.

Our only requirements are that The Barrett Specification of May 1, 1916, shall be strictly followed, and that the roofing contractor shall be approved by us.

A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request

The Barrett Company

New York Chicago Philadelphia Boston St. Louis Cleveland Cincinnati Pittsburgh
Detroit Birmingham Kansas City Minneapolis Nashville Salt Lake City Seattle Peoria

THE BARRETT COMPANY, Limited

Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

Experience has shown us that if two layers of a fabric be pressed together once, or oftener, without allowing the original position of the threads to vary after the first passage, the original design will remain, but if the layers are displaced, fresh crossings will take place and the water marks will become smaller. If the fabric be subjected to a large number of displacements the water mark will disappear altogether and the result will be that a deep seated, rich, and more uniform gloss will be produced, depending in a measure on the length of time allowed for the operation.

Many finishers assist this displacement of the superimposed water mark pattern by running one or more layers of the fabric on the chasing calenders round a roller A shown in Fig. 6; this has the effect of bringing a different series of threads face to face at each traverse of the cloth which usually travels round the course of the bowls from four to seven times before coming off. This usually effaces the water mark which is one of the requirements for such goods as imitation beetle finish, silesias, percalines, etc. This same effect is not only produced on the chasing calender where the goods are run many times around, but on the jacking and chesting calenders and on the beetling machine. In all these processes the layers of cloth not only keep moving during the actual operation, but they are also changed by the rewinding operations.

It will be seen from all this then, that to produce a good water mark it is essential that only two layers of cloth must come together and that they must not be disturbed from their relative positions until they are finished as previously described.

When the process of producing watermarkings by pressing the faces of two layers of cloth together is applied to silk it is called moire antique and the same process has given rise to a number of styles on cotton goods also. There latter finishes are known as moireettes and moireens, and since the process of mercerizing has been applied to cotton goods, some very fine results have obtained. Mercerized goods show a clearer and more intensified watermark than goods which have not been mercerized. Moire finishes are more generally used on goods in which the coarser ribs or threads run transversely across the goods; this kind of an organization seems to take the pattern the more plainly and easily.

The clearness of the pattern or design when moireing cotton goods depends, in a large measure, on the skill and experience of the calenderman, more so than it does in any other kind of calender work. The amount of condition or dampness, the temperature of the hot metal bowls, and the pressure applied to them, are all important factors that must be reckoned with and thoroughly understood and effectively applied. The processes employed in moireing, like many other finishing processes, can hardly be described on paper, as they are the outcome of many experiments and local conditions and are practically dependent upon the ingenuity and experience of the individual calenderman.

We might say that every moireing calender or friction calender should be fitted with an air duct or fan, so fitted as to blow cool air on the finished goods as they come from the last nip before winding on the shell, this is to blow off any superabundant moisture there may be left in the goods and prevent them from sweating in the batch and dimming the finish.

IMITATION BEETLE FINISH CALENDER.

The object of this style of calender is to give to the cloth a finish which closely imitates the finish which can be produced upon the beetling machine. The idea is to finish the goods glossy and mellow, the gloss must not be only on the surface, hitting only the high places, as in an ordinary calender finish, but it must penetrate practically the whole depth of the fabric. In this respect the finish differs from that imparted by the swissing and glazing operations previously described, inasmuch as the effects produced in the latter cases are top or surface finishes only—i. e., the fibres are crushed flat, thus giving the goods a more or less hard and papery feel and a flat appearance.

Now when a piece of cotton goods is subjected to the actual beetling process, it becomes full bodied, and posseses a lustrous appearance. To imitate this finish with a calender, the latter must conform to certain conditions existing in the process of beetling; one particular feature in beetling which gives the depth to the finish, is the action of the layers of cloth on each other whilst undergoing the hammering or beating of the fallers. This beating crushes the layers of cloth on each other and produces the thready and watered appearance and mellow feel desired. This result is due to the crossing of the threads of one layer of cloth on the other. The impression produced on these crossed threads reflects the light in a different manner from that in which it was previously reflected and this has the effect of producing the pleasing effect desired.

The beetling process is intermittent and tedious and it is obvious that a great saving in both time and labor could be effected if a similar result could be attained by means of a calender, which would, of course, be a continuous running machine. This object is largely obtained by means of a four-bowled swissing calender, the bowls being all of cotton, and rather soft pressed, and of course the goods are always run cold; after being conditioned and allowed to lie for two hours they are swiss calendered, once or twice, under medium pressure, and then chased, four to seven layers thick on the same calender. As we have previously described, this same thing can be done on the regular chasing calender, the jacking calender, or the chesting calender, also on some mangles but the four-cotton bowls are the best.

The following is a fair sample of two styles of imitation beetle finish which may be finished entirely on the calender just described:—

Heavy white sheeting. Bleach, mangle hot, dry, condition on the sprinkler, lie for two hours, chase on four-bowled calender (or five bowls), starch on back-filling machine using 30 parts starch, 10 parts (all by weight) potato starch, 150 parts china clay, 50 parts mineral white (sulphate of lime) 25 parts French chalk, 2 parts oleine oil, blue to shade, boil as stiff as possible. Dry upon cans, after this cool and condition on sprinkler and stretch, lay two hours, chase again on chasing calender and starch again on face using 1 part of potato starch and 120 parts of water, dry and cool off, condition and stretch on clip stretcher.

Light sheeting (56 x 40). This, when finished, has the appearance of a closely woven material with a pure

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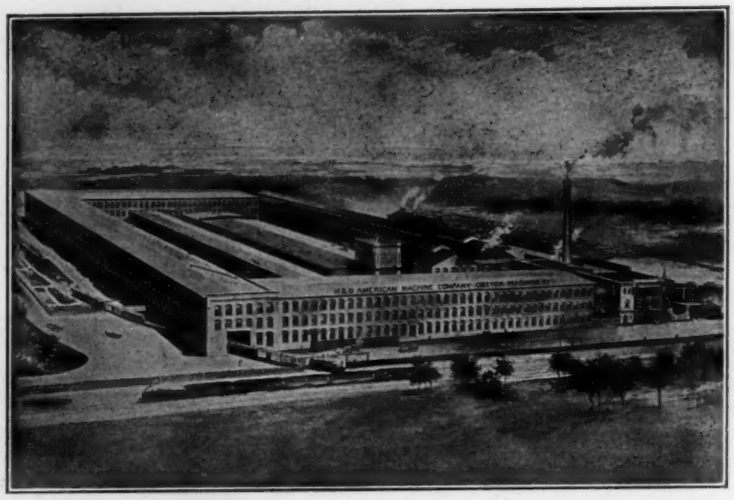
COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY
PAWTUCKET, R. I.

bright face, and a smooth starchy back with no sign of any space between the threads i. e., no pinholes, this finish is for a fine bleached bag cloth. Take 12 quarts each of corn and potato starch, 15 gallons china clay mixture, 6 pounds soap, blue, make 50 gallons and heat to 160 degrees F. After bleaching, dry upon cans, condition and lie, calender cold on swissing calender under heavy pressure, starch with the foregoing mixing on a Tommy Dodd mangle, dry, cool off and condition, chase on four-bowl chasing calender as before.

It may be stated in conclusion that the art of calendering cannot be taught by a correspondence school, or by following formulae, and in these papers, which we have written and compiled on the subject, our greatest, and in fact our only hope, is that they may serve as a kind of a sign post to point out the way rather than an arbitrary indication of any specific methods to be followed.

[This is the fifth and last of this series of articles on calender finishing. Other finishing subjects are under consideration and further interesting articles may be looked for in future numbers of COTTON.—EDITOR.]

Hongkong Hosiery Trade.

The hosiery trade in Hongkong now consists of two distinct divisions, namely, imported hosiery for the high-class trade and locally-manufactured articles for the cheaper trade. Previous to the war this cheaper trade was supplied very largely by Germany and to some extent by Japan, and Japanese socks still compete to a small extent with the locally made goods; but in a general way the Hongkong and South China knitting factories (employing chiefly Japanese-made yarn) are now supplying the great bulk of the cheap trade. The better-grade trade is largely American in hosiery for both men and women.

The women's trade is principally in silk goods. Japanese makers claim a large share of the cheaper grade of silk stockings. The Japanese stockings, however, do not wear well and soon spot. The demand generally is for a quality better than the Japanese but not up to the highest class of American goods. The American goods there are mainly second grade; they do not wear so well as the higher grade, and the climate causes them to go to pieces very quickly, particularly until they are washed. Nevertheless few of the shops stock the highest-grade goods, from any country, for the losses incident to keeping valuable goods any length of time are too great to make the trade at all profitable. The experience of most local users of the second quality hosiery, however, is such that the call for the better goods is improving, and just at present there is an increasing demand for the average or standard grades and highly advertised goods.

In the men's socks the demand runs largely to standard American silk and fine cotton socks and to English fine woolen goods. The widely-advertised brands of American socks are pretty much the standard in the market now, and there is no reason, apparently, why such should not continue to be the case. There is a heavier trade in fine woolen hosiery than would naturally be expected in a hot climate. The English goods imported to meet this demand are of a very fine quality and priced accordingly.

War Savings Stamps save lives.

Notes About Men You Know.

M. F. COLE, PRESIDENT, NEWNAN (GA.) COTTON MILLS.

A. J. ROSE, formerly superintendent at the Selma (N. C.) Cotton Mills has accepted a similar position at the Buffalo Cotton Mill at Concord, N. C.

WILLIAM A. GOSS, for the past seven years head of the department of carding and spinning at the Bradford Textile School of Fall River, Mass., has accepted a position as assistant superintendent at the Hargraves Mills No. 1 in the same city.

HENRY K. DICK, who was formerly with the textile department of the North Carolina School of Agriculture and Engineering, has accepted a position as cost finder with the Granite Linen Co. at Wortendyke, N. J. Mr. Dick has been doing a great deal of cost work and special investigative work during vacation periods since he has been connected with the North Carolina school. Prior to his coming to the South he was for many years connected with the department of carding and spinning at the Lowell Textile School at Lowell, Mass.

DAVID L. MACKAY, from the southern office of the Stafford Co., at Charlotte, N. C., was a visitor in Atlanta during the past month.

W. O. TALLENT, from Crawsfordville, Ga., has accepted position as superintendent of the new Adams Duck Mill under construction at Macon, Ga.

L. W. Cuddy well known in Southern mill circles, is now supervising inspector with the cotton goods division of the Quartermaster's Department.

C. C. SMITH, ASSISTANT TREASURER AT THE PALMETTO (GA.) COTTON MILLS.

JOHN H. HINES, superintendent of the Columbus (Ga.) Manufacturing Co., spent his vacation in New England renewing acquaintances with textile friends with whom he was associated before he came South.

J. M. CANNON will give up the position as superintendent at Fountain Inn, S. C., and devote his entire time as superintendent of the Simpsonville (S. C.) Cotton Mills.

J. A. ROUNTREE has resigned as manager of the Barker Cotton Mills, Mobile, Ala., to become treasurer of the Texas Cotton Mill, McKinney, Texas.

C. H. GOODROE has resigned as superintendent of Mary-Leila Mills, Greensboro, Ga., and accepted position as superintendent of the John E. Smith Cotton Manufacturing Company, Thomson, Ga.

R. H. WILDE has resigned as assistant superintendent of the Hargraves Mills, Fall River, Mass., after five years of service.

A. L. WHETSTONE has accepted position as superintendent of the Hampton (Ga.) Mills.

R. MANLEY HARRIS, superintendent of Hampton (Ga.) Mills, has resigned and entered the service of the government.

W. M. SHERARD has resigned as general superintendent of the Henrietta (N. C.) Cotton Mills to become

Look Out for Fires in August

Hot, dry weather. Every factory and warehouse becomes a tinder box. Fire starts easy. Burns fast.

Keep a sharp look-out for fire, now. Don't give fire a chance to spread. Cotton fires, once started, are stubborn. Hard to fight. Devour property. Eat up profits. Ruin business. Endanger lives.

Pyrene is the best protection against destructive fires. Pyrene kills fire. Kills it quick. One Pyrene will nip any fire at the start.

Pyrene costs only a few dollars. But it may save thousands. It may save your factory. Your warehouse. The lives of some of your employes.

Some put off getting Pyrene until it is too late. Will you be one of those? And suffer a tremendous loss? Or will you ward off calamity by equipping with Pyrene today?

Pyrene
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PYRENE MANUFACTURING COMPANY,
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Every Appliance for Fire Protection

vice-president and general manager of the Glenn-Lowry Manufacturing Company, of Whitmire, S. C.

A. G. KING, superintendent of the Merrill Hosiery Co. of Hornell, N. Y., until that plant closed a week or two ago, has now been made superintendent of the Julius Kayser & Co.'s plant at Sidney, N. Y.

T. B. REYNOLDS has left the Huntsville Knitting Mills and is now superintendent of the Stevenson Cotton Mills, Stevenson, Ala.

G. R. BROOK has resigned as general overseer at Imperial Mills, Eatonton, Ga., and accepted position as superintendent of Mary-Leila Mills, Greensboro, Ga.

W. OSCAR ORR has resigned position of master mechanic at the Brookford Mills, Hickory, N. C., and accepted similar position with Thomaston Cotton Mills, Thomaston, Ga. Mr. Orr is well and favorably known in the latter state, having been connected for many years with the Lanett Cotton Mills and the Lanett Bleachery & Dye Works at West Point, Ga.

ROBERT A. MORGAN, for the past two years manager of the Gate City Cotton Mills, Atlanta, Ga., will also act as superintendent, but will also retain his duties as manager.

W. P. WARD has resigned as superintendent of the Norris Cotton Mills, Cateechee, S. C., to accept a similar position with the Erwin Mill No. 4, West Durham, N. C.

THOMAS J. WILSON, for the past 12 years superintendent of Juliett Milling Co., Juliett, Ga., has resigned and accepted the superintendency of Forsyth Cotton Mills, Forsyth, Ga.

E. E. CHILD has been elected president of the Glenn-Lowry Manufacturing Company, Whitmire, S. C.

PAUL B. PARKS has been promoted from superintendent of the Erwin Mills No. 4 to assistant manager of the Erwin Mills No. 1 and 2 and the Erwin Bleachery, West Durham, N. C.

J. T. STEVENS has resigned as overseer of carding at the Calvine Mills, Charlotte, N. C., to accept similar position at the Fidelity Mills, Charlotte, N. C.

W. H. SHEPHERD, formerly of Philadelphia, is superintendent of the Kincaid Knitting Mills at Griffin, Ga., which began operations July 1.

S. V. PITTS, of Charlotte office of C. M. Plowman Company, is acting general manager of the mills at Lawrenceville, Ga., recently purchased by Plowman Company, Philadelphia.

L. O. BUNTON, who became superintendent of the Belbro and Piedmont Mills in Charlotte recently, has now been made assistant manager, and W. B. Sawyer succeeds him as superintendent.

C. B. GUNN, from Toccoa, Ga., has accepted position of superintendent at Spray (N. C.) Cotton Mills.

FRANCIS E. HYDE, formerly overseer of carding and spinning at the Rodman Mfg. Co., Allenton, R. I., has resigned to become a "rookie" for Uncle Sam. He left for Camp Upton, N. Y., on July 23d.

H. B. MILLER has resigned as superintendent at the Ensign Cotton Mill, Forsyth, Ga., to accept a similar position with the cotton department of the Atlanta (Ga.) Woolen Mills.

T. B. STEVENSON, for many years superintendent of the Langley Mills at Langley, S. C., has resigned to accept the position of general superintendent of the Henrietta Mills at Henrietta and Caroleen, N. C.

"Labor Unions and the Law."

(*Continued from page* 700.)

eration of Labor that only violence and breaches of the peace shall be regarded as unlawful. It seems to me that we have long since passed from that barbaric era when only breaches of the peace are condemned, and in the progress of civilization have long since recognized that combined economic power must be restricted by law when it conflicts with the public interests or oppresses private individuals. We have recognized that both labor and capital, when extensively organized, have the power and tendency to unduly dominate our affairs, and jeopardize our doctrine of individual rights. In the case of capital this doctrine has been recognized in the Interstate Commerce Act, the Anti-Trust Law, the Federal Reserve Act, and finally in the Federal Trade Commission Act of 1914, which says that no concern shall employ any unfair method of competition against another concern. Now the combined economic power of labor must be similarly restrained for the benefit of society. Regulated capital and unregulated labor is a contradiction in policy.

A notable instance where the economic power of labor should be curtailed is the boycott, and it finds illustration in the Danbury Hatters' case. That was a case of a comparatively small manufacturer in Danbury, Conn., running an open shop where over half his hands belonged to the union. Peace and contentment prevailed between him and his men, and they had in reality grown up together, in a spirit of mutual attachment. The union demanded that the plant be unionized, and that certain non-union employees who were not acceptable to the union should be thrown upon the streets. It told the manufacturer that he could not manufacture any hats or sell them in the market unless his shop was unionized. He would not surrender, and the entire power of the American Federation of Labor, with its 1,500 organizers and 30,000 local unions, combined to destroy that man's business. Agents of the Hatters' Union were sent to every community where he sold hats, and if the dealers persisted in buying that man's hats, those agents settled down in those communities and enlisted the power of all unions in that state and city to destroy that customer's business. In various parts of the country destructive and prolonged fights were conducted against retailers who bought of a wholesaler who dealt with the Danbury hatter.

Sanctity of Contracts.

I spoke of the enforcibility of contracts as one of the great issues. If any manufacturer enters into a contract with a labor union, or any group of men, it ought to be possible to file that contract with a court of equity and enjoin that union from using any power or influence or money to bring about a breach of that contract, and that union should affirmatively use its influence and discipline against members who violate that contract. Not until organized labor takes a position of that kind will most employers be willing to enter into any such contractual relations with them.

Then we have our individual contracts, which must be respected and insured against the invasion of outside agitators. You know of this recent decision of the United States Supreme Court in regard to the integrity of con-

tracts, and the tremendous use the employer can make of that in protecting himself against the disrupting influences of outsiders. A contract is as much a property right as is this chair, and an outside man, knowing of that contract, has no more right to come in and try to disrupt it, by persuasion or otherwise, than he has to take a hatchet to that chair. If you enter into relations with your employees in the form of contracts of a proper character, and the labor union agitator comes into your community and tries to get your men to break those contracts, he can be enjoined from doing so. Persuasion and peacable picketing, which in some communities are lawful, become unlawful if knowingly exercised to further a strike in violation of contract. By entering into proper contract, the employer broadens his legal protection in time of trouble.

The legislative situation is one of the most difficult to combat, because in this field organized labor aims to undo the great work which has been done to our organization in the courts. Heretofore the courts have held that the right to work and the right to conduct a business is a property right, and any one being interefered with in the employment of such rights can go into a court of equity and secure an injunction for the protection of such property right. So the non-union men and the open shop employers have appealed to our courts of equity from time to time for the protection of these rights. The result was the preparation of the model Anti-Injunction Bill, which I suppose has been offered in the legislatures of nearly every state in the union. It declared the right to work and run a business should not be a property right.

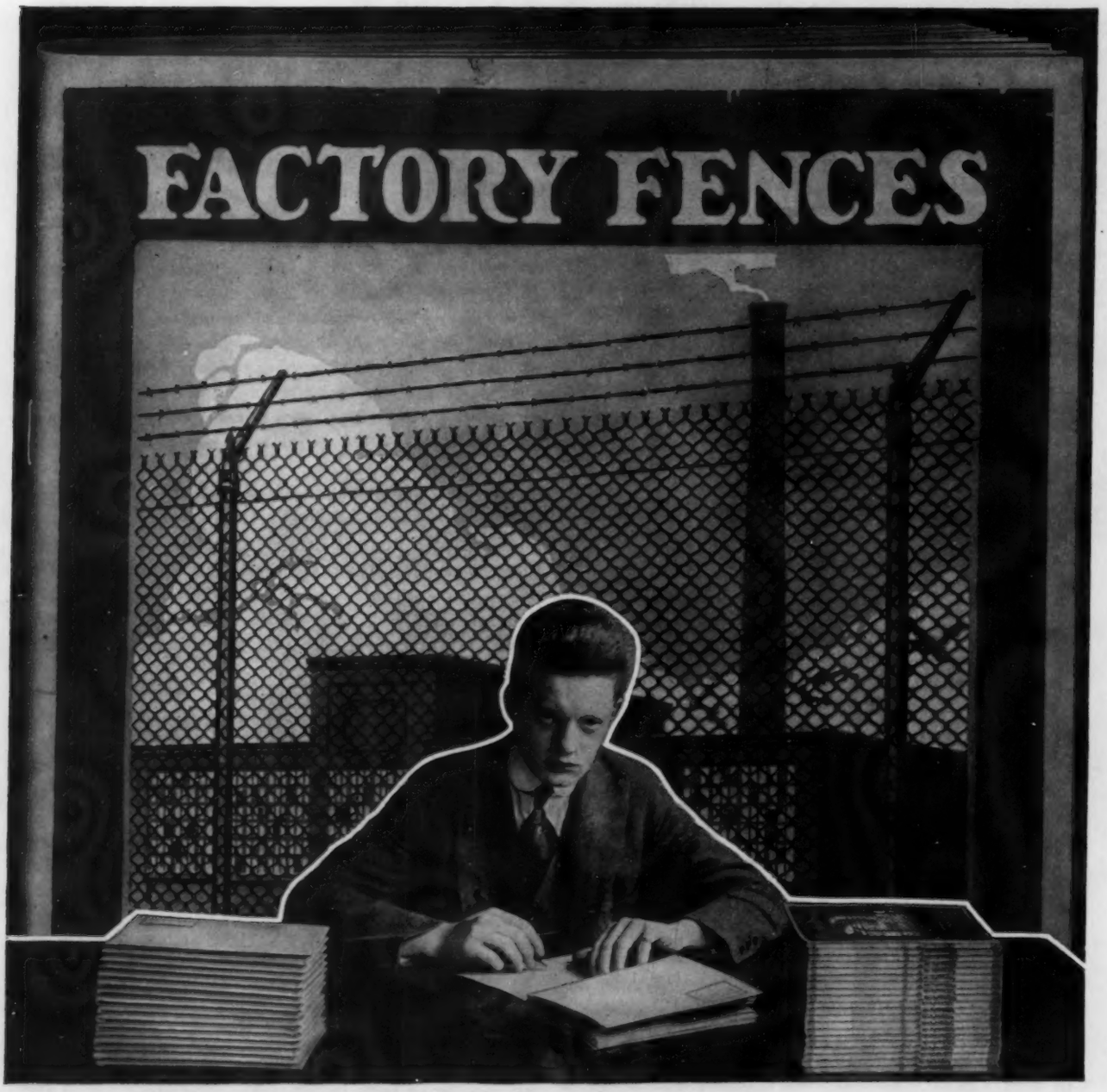
The model Anti-Injunction Bill was finally passed in the conservative state of Massachusetts, in August, 1914. A short time after that law was passed through the very irony of fate, the I. W. W.'s, that organization which respects courts and injunctions (laughter), entered a court of equity to seek an injuction against the Hod-Carriers' Union for calling strikes on buildings where members of the I. W. W. were employed. The court was therefore squarely confronted with the issue as to whether the law was valid. If the law was as it had been before this statute was passed, the I. W. W.'s were entitled to an injunction against the Hod-Carriers' Union, but if the right to work was no longer a property right, as declared by that new statute, then they were not entitled to an injunction. The court examined the case and in an unanimous opinion held that it was null and void and unconstitutional, because the property right of a man to work, which is so often his only property right, is as much entitled to protection as any other property right, and to deny it equal protection before the law would serve to place the worker on an inferior plane to that of other citizens.

Class Legislation.

Even before the war we had reached a state in regard to class legislation which was very dangerous. President Taft, you well remember, vetoed some bills wherein it was provided that none of the public funds should be used to prosecute labor unions. The same bill came before President Wilson, and he, seeing the tremendous value of the appropriations, which could not be held up, felt that he could not veto the bill, and so, on the demand of organized labor, we appropriated funds for the enforcement of the Anti-Trust Laws, upon the condition that none of those moneys should be used to enforce those laws against labor unions, and ever since then similar appropriations have carried with them the same condition. There we have an example of the exercise of the legislative and executive functions of government for the special purposes of a class; an example of the boldest and most indefensible class rule; of the abandonment of principle for classes.

Now, I am sure you see the seriousness of this problem which has been accentuated by the war. Having achieved the blessings of life, liberty and the pursuit of happiness beyond all precedent, we have suddenly been brought face to face with a world cataclysm, where a gulf yawns to swallow all that is most precious in our lives, and there being no escape either with honor or with safety, we have sent our boys to France, there to face the greatest hell on earth, but there to remain until the possibility of another such assault on civilization shall be forever swept away.

In the meanwhile we must keep the home fires burning, remembering that the altar at which this generation worships is the altar of democracy, and we must strive to protect it from profanation at home as well as abroad. No people in the entire history of the world ever poured forth such sacrifices upon any shrine; no people were ever moved to any good cause by a holier zeal; Christianity itself never took such a toll of martyrs. But in the midst of our nobility of passion and our exaltation of sacrifice, we must remember that the democracy for which we fight means government of the people, by the people, for the people, but above all things it means government as the supreme agency of the people, to which all people and all groups and all classes owe the supreme allegiance of loyalty and obedience. In these days, when powerful interests organize for collective action until they almost rival the power of the State, it is the first essential of civilized order that they shall accept the rule of the majority under our Constitution and our laws, and that they shall not interpose either physical or economic resistance to its decrees. The loss of our men in Picardy and Flanders will become as sheer waste if at home powerful organizations of employers or employees are to make democracy totter by resistance to its constituted authority. It is a lesson we must bring home to our people, that unless out of this world Gethsemane there shall come greater respect for law and order and firmer authority on the part of the State, the goal which we seek with our prayers and our tears will never be attained. If this world conflict is to be succeeded by a class struggle—some say it is, I don't believe it—if we are to face a class struggle where one group seeks to lay profane hands on our government and prostitute it as the tool for class interests; if we are to have a government where some are subject to laws from which others are exempt, and if organizations can declare organized defiance of laws which please them not, then the dreams of Lincoln and the hopes and aspirations of our common people will perish. It is time for the employers of this country, organizing locally and nationally, to point out the abyss which bordered the path we were following before the war, and for the illumination of the true ideals of democracy, to light a candle which by God's grace shall never be put out.



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How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Waterproofing and Fireproofing Canvas.

Editor Cotton:

I am desirous of securing some information in reference to the preservation and water-proofing of cotton duck. These are times for conservation and not only the price but also the necessity makes everyone look for an opportunity to aid.

In the business with which I am connected I use comparatively large quantities of cotton duck made up in curtains to protect the engineers and firemen of our locomotives from snow and cold winds. This same quality of duck is used to cover the coal in the locomotive tender tank when operating snow plows, to prevent snow from mixing too freely with the coal. Therefore, you will perceive, that this cotton duck is exposed to the action of coal gas and heat, besides being exposed to the elements. It is also exposed to sparks.

I would like to know if there is a preservative which we can utilize that will protect this cotton duck from gas, render it as near spark proof as possible, make it shed water and I believe it would also be desirable to make it a somewhat darker color?

I shall be glad to hear from correspondents in your Discussion Department in this connection.

A Railway Man (Canada).

Editor Cotton:

Replying to your correspondent I submit the following:

In order to dye the canvas and at the same time to fix it so that it will be non-subject to mildew it should be colored with cutch in the usual manner. In order to render it flameproof it should be treated according to the method of Sir William Perkin, which method is as follows:

The canvas is run through a 45 degree Tw. solution of sodium stannate until the cloth is thoroughly saturated and then squeezed and dried without rinsing. The canvas is then passed through a 15 degree Tw. solution of ammonium sulphate again squeezed and dried without rinsing. A further treatment with cold water is advised in order to remove the soluble sodium sulphate but this is not necessary for this class of goods. It is claimed that this treatment results in a permanently fireproof fabric and that the fabric is increased in strength about 20 per cent.

A similar treatment would be as follows: Dye with cutch and bluestone, squeeze and enter into a boiling bath containing 2 per cent chrome and 10 per cent aluminium acetate. The material is then passed through a soap solution which would precipitate an aluminium soap on and in the fibers thus rendering it waterproof. The amount of insoluble soap thus precipitated onto the material would probably render is fairly well spark-proof.

The foregoing recipes could probably be changed around somewhat on a practical workout. A. F. Musgrave.

Editor Cotton:

Replying to "A Railway Man's" inquiries regarding the preservation and waterproofing of cotton duck, I would say that to begin with, a fabric to be waterproofed must be woven very tightly and must be free from all flaws in the weaving. Then it must, if unbleached, be thoroughly scoured in caustic soda to remove the extraneous greasy and proteid matters from the cotton, or it will not readily absorb the waterproofing fluid. This scouring is best done by boiling the cloth for 12 hours under pressure with a liquor containing two per cent caustic soda and one per cent of soda ash, these quantities being calculated from the weight of the goods. After boiling, the goods are washed and scoured in a solution of sulphuric acid and water standing at 1 to 2° Tw. and washed thoroughly from the acid and then evenly and thoroughly dried. They are now ready for any of the various styles of waterproofing that it may be desirable to apply.

In England nearly all tarpaulins for railway and army work (except of course khaki) are waterproofed by what is known as the "Willesden" process: A cold solution of sulphate of copper is precipitated with the exact amount of caustic soda, or slightly less, certainly no more than is necessary. The temperature during this operation must be below 20° C. The precipitate is washed with condensed water until the washings give no precipitate with chloride of barium. This precipitate of copper oxide, which should be of a light bright blue color, is then filtered from the wash water and pressed to get rid of most of the water (it is better if dried), and dissolved in just enough ammonia of sp. gr. 0.93. The strength of the solution in copper is then determined, and enough additional ammonia is added to make the solution contain 18 to 20 gramms of copper to the litre. The goods are passed through this liquor at the rate of 25 to 30 yards per minute, they must be run at full width and heavily squeezed on coming out of the liquor, between heavy calender rolls. It is customary to dissolve more or less cellulose (i. e. cotton rags or fibre) in the liquor before using it which helps to fill up the interstices in the cloth, also a little bichromate of potash or soda may be added to the bath, this adds to the permanancy of the waterproofing. By this process the surface of the fabric becomes more or less gelatinized, according to the length of time the cloth is in the solution, and all the pores are filled up as if they had been covered with an oil color. *Such goods are waterproof, mildewproof and spark proof.*

Many patents have been taken out for waterproofing cotton goods by various processes involving the colloid theory, i. e., by the precipitation upon and in the fibre of a hydrated metatic peroxide, or a tannin in combination with

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some other colloid substance as albumin, glue, casein, the fatty acids, &c. The true khaki dyed goods are among this class, their waterproofness or repellancy being caused by the colloid peroxides of iron and chrome precipitate on and in the fibre, in most cases conjointly with some fatty acid (soap) and it may be that this style of goods would suit "A Railway Man's" requirements exactly, provided he could get the real Khaki, dyed with iron and chrome peroxides as it ought to be, and not with the aniline colors. These higher oxides are non-inflammable, and goods dyed in this way are *water repellant, mildew proof and fire resistant.*

Lowry's process of water proofing is a good one and one of the best. He steeps the fabric for some hours in a boiling mixture of soap glue and water and exposes it to the air until dry. It is then digested for ten hours in a strong solution of alum and common salt, washed well and dried at a low temperature of not over 80° F. This process gives good and effective results but its efficacy depends upon the length of time used and the low temperature of the drying processes which are not very practical.

One of the best methods of water proofing and the one which is the most frequently used is to steep the goods (after scouring and drying as previously explained) in a solution of acetate of alumina cold at 7° Tw. and dry up as cool as possible (not bone dry), then run in a five per cent solution using a neutral melting hard soap in soft water. Then run in a solution of copper sulphate at 1 to 1½° Tw., rinse and dry up. If the brown color does not matter then acetate of iron can be used in place of the alumina in the foregoing and the result will be a *waterproof, mildewproof, sparkproof* fabric of a light brown color.

It must be said however, that mere repellancy as produced by the precipitation of fatty or resinous soaps of the various metallic oxides is not permanent, and will not remain repellant for any great length of time after exposure to the weather, but this is the process usually adopted and may serve the requirements of "A Railway Man" as it will answer very well for a certain length of time—maybe as long as the cloth itself will last.

The very best kind of a waterproofer is one that will permit of the moistening of the outer surface of the cloth, but which opposes the passage of the water to the other side, and there are a number of colloidal precipitates which will fulfill this requirement: collodial alumina and tin, gelatin, glue and casein, rendered insoluble by chromic acid, alum, or formalin, or, cellulose precipitate from Schweitzer's reagent (ammonia cuprate) as described in the Willisden process.

Colloidal alumina may be prepared from the diacetate of alumina, this in the presence of much water, and heated, furnishes a hydrosol of alumina which is precipitated in a gelatinous form by the addition of a solution of sulfuric acid. The salt thus obtained is absolutely insoluble in water and consequently waterproof. Gelatin, glue and casein may be applied to the cloth and then rendered insoluble (waterproof) by chromic acid or formalin. It has been found that compounds of the various oxides form insoluble compounds with gelatin. Chromic oxide 3½ parts render 100 parts of gelatin insoluble. Also that chromic acid, and its salts render gelatin insoluble in the presence of light. Also that chromic aldehyde acts upon gelatin (or casein) either in a gaseous or soluble state (solution). In view of this many processes are extant by which the cloth being steeped in gelatin, glue or casein with the addition of a solution of bichromate of potash are simply exposed to the sunlight and thus rendered waterproof. It must be remembered, however, that all waterproofing processes involving glue, gelatin, or casein will render the goods stiff; to avoid this castor oil or some neutral soap must be added to the mixture to keep the goods soft and pliable. In this regard a process has been invented by the writer which has proved to be a very efficacious one, it renders goods—if fairly closely woven—absolutely waterproof, the process is as follows: Thoroughly soak 30 pounds of casein in water over night; the next morning add sufficient ammonia to the mixture to make it soluble, then add 15 pounds of pure tallow soap in solution, bring the whole quantity up to fifty gallons; heat up, but do not boil it. Pad the goods with this mixture on one side and run directly through an ageing machine charged with formalin vapor in such a manner that it will take 10 minutes to run a given point through the machine, return the goods and pad again on reverse side, and age as before, then run the goods immediately through a solution of sulphate of copper at 1½ to 2° Tw. cold.

Another: Casein is mixed with about five times its weight of water and stirred to a creamy liquid. This is gradually mixed with a weight of slacked lime equal to about 1/40 of that of the casein. At the same time half the weight of the casein in soap is dissolved in twelve times its weight of water, and the soap solution is mixed with the other. The fabric is impregnated with the mixture till its weight is doubled, it is then run through a solution of acetate of alumina which makes the casinate of lime insoluble and forms a manganate of alumnia with the alkaline soap. The goods are finally washed in hot water and dried and calendered.

Probably if the above conditions were reversed it would make for a better and more permanent result, i. e., run in acetate of alumina at 7° Tw. and dry up, then run in the casine and lime and soap, and finish through a solution of sulphate of copper at 2° Tw., wash and dry up. This would be *waterproof, mildewproof and sparkproof.*

Various compounds of tannin with glue, casein, and alumina can also be used as waterproofers.

William B. Nanson.

Practical Points on Spinning.

EDITOR COTTON:

First we will consider what is practical spinning? If we use the definition of the word practical we will have to secure the services of a practical and efficient man for the oversight of the room; one who has had practical experience in the line of work of which he is to have charge.

Now as never before does the successful operation of the spinning room call for men who are strictly business, both on the job and on the street. We must control ourselves in regard to our tempers and treat all help just as we would like to be treated if we were in their place. We must not have any pets under our charge, nor grant special privileges to any, as this will cause much fric-

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tion which will take several men in higher positions to adjust.

In my many years of practical experience I find the only and best way of managing help is to treat them all in a strictly business-like way and teach them that I mean just what I say. We must not spend our time talking to the help, telling them funny tales, as this destroys their confidence and they will look for this instead of work. It is better to have no connection with the help only on business concerning the mill and their work. We should be very careful and consider all things before taking action, as we may act in the wrong way. Never make promises that cannot be fulfilled. If we make false promises that gives the help a starting point to criticize and soon all the help in the department will be talking of it. We should train the help to report any thing that is going wrong with their machines so it can be attended to, for a "stitch in time saves nine." We should teach our help what it means for their welfare as well as the mill to do good work in every respect.

As I have mentioned in a previous article, oiling is the most important factor in a mill and especially in the spinning room. Why, because with out oil we cannot run the spinning room but with proper oiling we can run all the machinery all the time, but with half oiling we can run only half the machinery half the itme and therefore the machinery won't last half as long as it should. Oil is cheap in comparison with labor and machinery in these war times, so it is very important that we give this point our careful attention by using good oil and seeing that it is applied at the proper time and in the proper places.

Spindles should be oiled every two weeks or every 120 hours as the case may be. If we were sure that every spindle was properly oiled every two weeks, it would not be necessary to have them oiled so often but not being certain we request them to be oiled every two weeks as it is better to be on the safe side. We all know that a dry spindle will not produce good yarn nor will the work run well, as a dry spindle will cause vibration and the vibration will cause the ends to break down and therefore cause unnecessary waste and labor. A good light oil should be used for spindles one that is light in fluid, but has good lubrication value and will not gum in a close fitting and at high speed.

I would recommend a non-fluid oil or grease for the roller, necks and stands to be oiled once each day. Top rollers should be cleaned thoroughly each day before using a good machine oil in oiling.

Banding a spinning frame is a very important item and should be given careful attention. Bands should be made of uniform size and twist and care should be taken to have all bands tied on with the same amount of tension as nearly as possible. It is well understood that a slack band will make soft yarn and soft yarn means waste and bad running ends, as the speed of the spindle is not the same and this will necessitate different weights of travelers. That being the case it is impossible to have good running spinning. With either tight or loose bands on our spinning frames, the knots should be tied so they will not present much obstruction in passing around the whorl, as a large knot will cause a jumping motion and will cause the ends to break down; this means more waste and labor.

Rings and bobbins are very essential to good running spinning. The bobbins should not be too small for the size of the ring and the spindle should be in the center of the ring. If the bobbin is too small it will cause the traveler to pull the end toward the center instead of drawing it around the ring as it should and will cause uneven and strained yarn and very bad running work. Machine builder's catalogs gives an estimation of different sizes of rings and bobbins for different numbers of yarn. For filling yarn from 30 to 40 a 1½-inch ring using a bobbin ⅝-inch in diameter, and on warp yarn, spinning numbers 30 to 40 yarn, for good running work use a 1⅝-inch No. 2 flange ring and a bobbin ⅞-inch in diameter and 6-inch traverse. With a good grade of cotton and a staple 1 1/16 to 1⅛, you will have good running spinning provided that you have good even roving and regular weights. It is impossible to have good running spinning with irregular weights of roving for you cannot draft to suit but one and if there be several different weights of roving in the same creel you will be making that many different numbers of yarn, as the case may be.

Draft is very important and essential to good running spinning. As we know, excessive draft is detrimental to good running spinning and will cause uneven yarn and bad running work. The draft to make a good even strong thread should not exceed 10½ on double roving. Standard twist is the only rule we have in making yarn, that is the square root of the number multiplied by 4.75. For example, take No. 30 yarn; the square root of 30 is 5.48 multiplied by 4.75 gives 26.03 turns per inch. This is for ordinary warp twist; for extra warp twist use 5.00; for extra mule twist use 4.00; for frame warp twist use 4.50; for ordinary mule twist use 3.75; for frame filling twist use 3.50; for ordinary filling twist use 3.25; for ordinary hosiery twist use 3.00; for extra soft hosiery twist use 2.80

Now we come to the rollers which are also very important to good running spinning. See that they are properly covered and that good material is used in the covering and that they are properly handled after they reach the spinning room, for many a good roller has been ruined by carelessness with oil and by laying them down on the side. Rollers should have a good place to be stored and never left in the box after they reach the spinning room. They should be placed in a cupboard built especially for them, so, that each roll can be placed so that the weight will be entirely on the ends of the roll and not on the side.

We should have our frames overhauled once every year, the spindles plumbed at bottom and top and the guide wires reset and stands cleaned of all gum and dirt which have accumulated in them. The foregoing suggestions if carefully carried out will produce more efficient spinning.

L. B. M. (N. C.).

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Cotton and Its Part in Making Commercial Treaties After the War.

BY "EXPORTER."

News has come from England recently, of the probable intention to give notice of termination to all commercial treaties so as to allow a rearrangement of the commercial treaty situation of England after the end of the war. About a week earlier a similar intention was pronounced by France, and it was indicated in this case that the principal purpose of that country is to terminate her present so-called "most favored nation" treaties. Italy has given notice of termination of her treaties of the same character already during the last year. Three important nations, therefore, have decided to discontinue their present commercial treaty relations and here expressed the intention that they will reorganize as early as possible the international arrangements on the basis of which they have been dealing with other countries before the war.

As to Germany, most of its foreign treaties have been broken by Germany entering into a state of war with the countries in question, which automatically terminated also the existing treaties.

Theoretically, therefore, the commerce of the world, as far as it still exists under present circumstances, is carried on today without proper treaty safeguards. This is especially the case with regard to the commercial relations of the United States with countries with which there exists only a "most favored nation" treaty. By such a treaty the United States has secured very often rights which do not originate in the direct treaty relations between the United States and the other country but in treaties made with third parties. It is the principal aim of a treaty of commerce containing the so-called "most favored nation" clause to give to the contracting parties all the rights which these parties have granted by similar treaties to other countries. The most favored nation stipulation therefore is a sort of a reinsurance against the possibility of unintentional discrimination by one country against another. Unfortunately this right for special treatment ends as soon as the special treaties, by which the special advantages have been secured, come to an end. So, if the United States has a most favored nation treaty with Japan they enjoy all the advantages of the special import rates allowed by Japan to France, England and other countries. In the moment, however, when the French-Japanese treaty comes to an end, the exporter of the United States also loses those of the preferential import rates in Japan which were secured to France by the Franco Japanese pact.

Now when the existence of all these treaties is endangered the position of the American exporter will become exceedingly difficult unless steps are taken to secure his rights by more specific treaties than those at present mostly used by the United States. All authorities on foreign commerce seem to be of the opinion that the war will be followed by a period of intense commercial competition amongst the leading nations of the world. Also there will be a tendency to conserve much of the raw materials produced in one country for the industry of that nation, and not to let fall into other hands more than will be absolutely indispensable. Economic alliances have been proposed between the two groups of belligerents and with the continuation of the war the necessity of such alliances becomes more and more evident. Countries may think it to their advantage to club together in groups and to exchange between each other such raw materials as they possess. Under these circumstances the possession of cotton by the United States may prove of considerable advantage.

Taking the world's cotton production to be roughly 24,000,000 bales every year and the world's mill consumption about 20,000,000 bales, this shows that there is very little cotton left above the usual consumption. Of all the cotton produced during a year 15,000,000 bales come from the United States, about 4,000,000 from India, 1,500,000 from Egypt and about just as much from China and Russia. All the other countries are of very small importance for the production. In round figures the United States consumes about 5,500,000 bales of cotton industrially, nearly 4,000,000 bales are taken up by England, about 3,000,000 bales by Germany, and just as much by the remaining European continent, or slightly more. Japan and India also are considerable consumers of cotton.

The United States, therefore, holds the key to the cotton situation of the world. England, having in India and Egypt a considerable cotton producer, might be able to fill her own wants with colonial production of cotton, but there would be still a deficit in the supply as regards India and the bigger of the British dominions, and there is of course the very important fact that neither Indian nor Egyptian cotton can take the place of the American product. So England will continue in the future to buy American cotton in addition to that produced in her own empire. We will exchange this cotton willingly for many of the products we are compelled to buy from English sources of which, at the present moment, rubber is possibly, the most important.

France also will most certainly be willing to exchange some of her products needed by our own industry against a supply of American cotton. In fact, France, having no important cotton producing colonies, will be compelled to make

an arrangement to that effect. Of course no difficulties should nor can be expected to arise with the countries now allied with the United States as regards the distribution of raw materials after the war.

If there was to be trouble, it would be expected rather from those countries at present at war with the United States. The Mittel-Europa dream plans of Germany and her allies might work excellently if the territory covered by Germany and the countries she expected to join her were situated in a climatic belt containing all the material for an economic alliance which really could be made entirely independent of foreign supplies. In the case of Germany, however, the plan must become a failure through the fact that nearly all the territory covered lies in the temperate zone and that, therefore, there is no possibility of growing inside the so called Mittel-Europa many of the raw materials needed today by the world's industries.

The principal of the raw materials lacking is cotton. It has been said that Russia might supply Germany with all the cotton she wants. Russia already has produced cotton at the rate of 1,500,000 bales at its best, and it might be possible that this production can be increased. Under the Mittel-Europa plan, however, Germany would not be the only consumer of cotton, but naturally the industries of Austria, Hungary, Russia, Poland and Turkey would also demand their share of the available supplies. Before the war we were sending cotton to these countries at the rate of nearly 4,000,000 bales every year, and it will require a large expansion to bring the Russian production up to that standard; quite apart from the question of whether the Russian cotton would actually be suitable to replace satisfactorily the American product in quality. Germany and Austria-Hungary can not always live a life of economic seclusion, and it is very doubtful whether Russia would be willing to adhere to any arrangement Germany may make at present with that country.

Rubber is an example, coffee another, and there are a great many. Thus if Mittel-Europa wanted to sell cotton goods, these cotton goods must come up to international standards, and American cotton would be required for their manufacture. Germany and the Mittel European countries, therefore, would need American cotton. They could not go without it.

Therefore with cotton at its disposal, America certainly holds an important trump that can be played in any emergency.

It most likely will be used by the American negotiators when the commercial treaties are renewed after the war. Our national interest in the renewal and form of these treaties is of a two-fold character. We desire to secure for our products, both agricultural and industrial, free and unhampered markets in the world and we also must secure to our industry a free and unhampered access to the world's industrial markets.

The world, after the war, may have to introduce a rationing basis for raw materials. We have sufficient cotton to carry our own industry through any emergency, and we have approximately another 10,000,000 bales available which we can sell to friendly nations. They will be acquainted with the fact, and they will most likely have certain raw materials which they can give us for our own industry. During the war such an exchange has already been arranged, and this system may be continued in a less stringent form. Cotton might be exchanged against rubber, jute, or any other articles we need, and by doing so the supply of these commodities to our industry will be guaranteed. One may say that under such a system there would be danger that we might be left with a surplus of cotton on hand. This is hardly thinkable considering that the world's demand for cotton is increasing and that much cotton will be needed immediately after the war. Countries, which do not give us willingly the materials we need, would not receive cotton or any other materials we have to exchange. In the case of cotton such a country would find it fairly difficult to secure other supplies and most likely would be forced to agree to an arrangement with us so as to obtain cotton.

The cotton which is not sold and remains in our hands in the natural course of things will slowly be consumed by our own cotton industry, which is growing rapidly and which, after the war, may have to deal not only with the national trade but will have acquired also a strong position abroad. So more cotton will be needed in the United States. The question may arise as to how it will be possible to secure unhampered markets for the surplus of cotton goods to be shipped abroad. The solution of this problem will be found in making closer commercial treaties with countries producing materials which we need for our own consumption, but are produced little or not at all in the United States. We buy great quantities of coffee and tea abroad; we spend, in fact, every year millions of dollars for imports, and with a proper arrangement in support of our own exports to the countries in question, they will no doubt assist us a good deal in placing our surplus of cotton goods if we should find it necessary in the future to manufacture a larger quantity of our own cotton than we have done up to now.

As it is, the interests of the cotton grower and the cotton manufacturer are closely interwoven in this respect, in fact, they are analogous with those of the producers and manufacturers of the whole country. What we have to learn now, is to discriminate as to the character of foreign commercial treaties. After the war we shall find that our old "most favored nation" commercial treaties will not hold good. They may secure us certain rights, but these rights may deal with questions in which we are not interested as a commercial nation. Today the general tendency of the world's treaties goes in the direction of specific treaties, so called tariff treaties, securing special rights to the contracting party of a nature to benefit the intercourse between both in a more intimate way than can be done by a general "most favored nation" clause.

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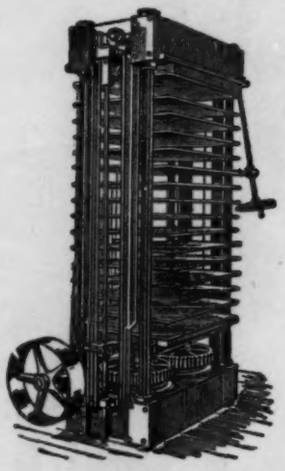

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Analysis of Warp Loom Design

BY WILLIAM DAVIS, M. A.

Before proceeding to an analysis of actual warp loom designs it may be of interest to outline some of the varieties of yarn used in such goods. The types under consideration are fabrics used for scarves, shawls, wraps, etc., and an examination of these textures shows that the handsome effects are as much the result of suitable yarns as of the design which in many cases is of extreme simplicity, the real elegance being caused by the type of yarn employed. If the fabric is simple in structure such as is the case of fabric gloves which are cut from a web in bulk, the yarns employed are usually single or two-fold cotton where the surface is clear and the yarn strong. These threads are set very tightly in the loom so as to give the required consistency and bulk. In the fancy branch of the warp loom, however, the best effects are secured from a combination of thin yarns with thick ones, threads of the lustre of silk are useful for purposes of embellishment and also we find the brilliantly colored chenille yarns used with excellent effect in the fabric.

Starting with the thread Fig. 1 which has to form the groundwork for the fabric, there is little to be said about

FIG. 1. PHOTO-MICROGRAPH OF 2-PLY YARN.

it except that it must be plain and durable. For many designs the ground is this plain two-ply white thread with a loose twist and surface material in abundance so as to spread itself somewhat over the spaces between the loops. As a rule this ground thread is sett quite loosely in the fabric with the spaces plainly showing, the real substance being added by one or another of the extra guide bars. For the purpose of accurate comparison the next illustration, Fig. 2, is a photo-micrograph worked out in the same ratio of enlargement (40 diameters) as the Figure 1 and represents the type of thick, soft, woolen yarn largely used in these goods for the extra material fed on to the ground fabric. This is usually a pure white yarn and so loose and open in texture that it is almost comparable with a sliver or roving—there is little torsion present and the thread is always single ply. This variety is used chiefly in the long floating effects so often seen in these textures where the yarns simply lie on the surface or receive a slight zig-zag movement to interlace them with the ground fabric. Figure 3 is a similar enlargement or photo-micrograph of the yarn which features chiefly in the color touches of these fabrics and is a two-fold thread of mercerized cotton, so generally used in all branches of the textile trade. For white pat-

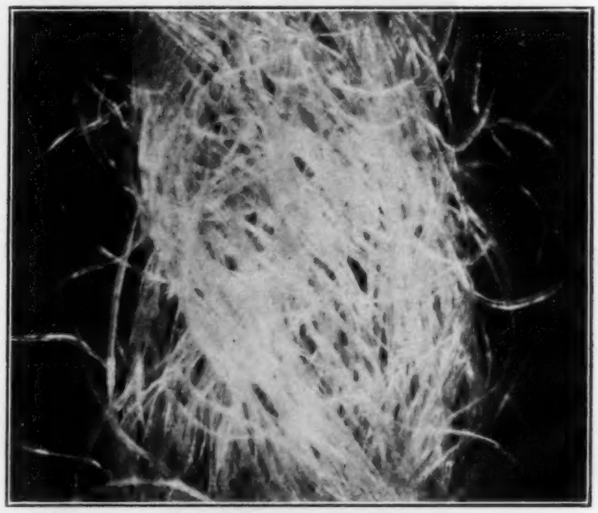


FIG. 2. A SOFT WOOLEN YARN ENLARGED 40 DIAMETERS.

terns, the thick, soft, fleecy yarn is sometimes surmounted by a thinner streak of white mercerized thread and there is also a large demand for the lighter and more delicate tints of this material.

Perhaps the most fancy and elaborate type of yarn to be found in these warp loom fabrics is the chenille shown at Figure 4, which is its exact size as used and which are made in a special loom by a process of weaving. Forming the core of the yarn are several fine, white cotton threads

FIG. 3. PHOTO-MICROGRAPH OF 2-PLY MERCERIZED COTTON THREAD.

arranged in a warp with a space between each set of six and a pattern is woven as indicated by the appearance of the thread in its color arrangement. These fabrics are afterwards cut throughout the whole length of each section in a vertical direction so that each set of six threads obtains its portion of the fancy weft threads which form a com-

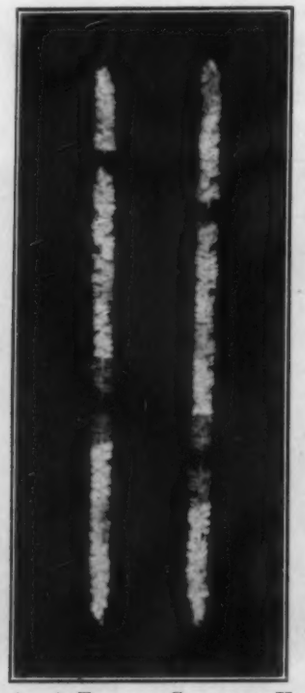
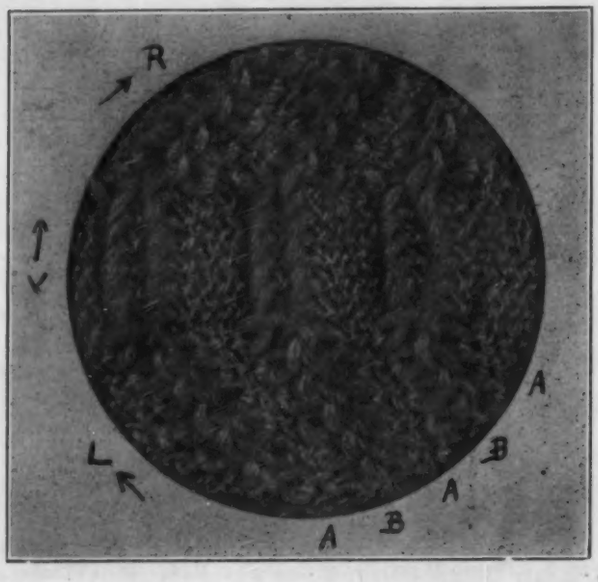


FIG. 4. A TYPE OF CHENILLE YARN.

plete pattern all along the length of the yarn. These threads are often met within delicate solid shades and all are highly effective in producing ornamentation of texture.

In place of mercerized cotton yarns we may have the artificial silk threads, those made from wood pulp and real silk are to be met within a number of patterns. For the ground of the textures, a fine woolen yarn and a coarse or thick woolen thread have been mentioned, but there is no

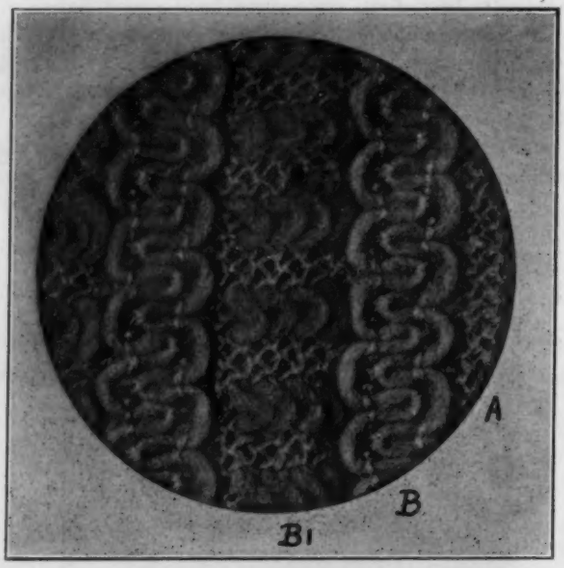


PATTERN 5. EFFECT PRODUCED BY THE USE OF A THICK SINGLE YARN IN THE SECOND GUIDE BAR.

reason why these should not be made of cotton in articles required for a warmer climate, or where the price is an important consideration. The chief advantages of wool for a groundwork is that it is more comfortable to the touch and retains more effectively the heat of the body.

ANALYSIS OF DESIGNS.

Having outlined the chief types of yarns used in these goods and from a perusal of previous articles on warp loom mechanism, the reader should be able to follow a series of analyses made of such fabrics. For convenient reference to these patterns let us consider the thin worsted thread as used in the ground as yarn *A*, the thick, soft sliver-like thread as *B*, the mercerized cotton yarns as *C* and the chenille threads as *D* and these letters will be used in the illustrations of the fabrics so that their position and function may be readily recognized. Pattern 5 gives a view of an all white warp loom product where we have only two varieties of yarn, *A* being the fine counts of two-fold worsted and *B*



PATTERN 6. B1 EFFECT IS THE RESULT OF GRADED TINTS OF COLORED YARN IN THICK COUNTS.

being the thick, soft, single thread. The design can be produced by the use of two guide bars, one for the ground thread to which is given the simple one and one movement of the Denbigh stitch. The second or thick yarn *B* has its threads placed in a second guide bar.

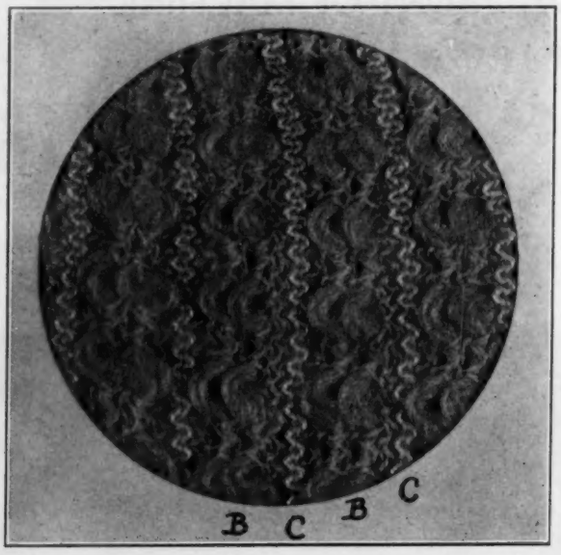
There are about three of the ground individual yarns to one of the thicker sort, but the latter on account of their bulk, form quite the central feature of the texture. The second guide bar containing them has a movement to the left for six successive steps which is followed by a stationary position made by lapping over the same needles for six courses. When the vertical portion is completed, it is succeeded by a movement to the right for six successive steps when the pattern wheel has turned its round and brings the pattern back once more to the starting point. These movements are indicated on the left of the illustration 5 by arrows, *L* for the section to the left, *V* for the vertical portion and *R* for the portion running to the right.

The resulting fabric possesses a lightness and elegance which makes it suitable for a variety of different articles of wearing apparel used for special occasions. A leading feature of the pattern lies in the very effective result made

possible by the use of only two classes of yarn and the pattern arrangement is also of the simplest description lending itself to speedy production on the machine.

Pattern 6 gives a view of a design produced with the same two classes of yarn, *A* the fine two-fold worsted counts and *B* the thick, soft, single, thread. In this example however, further variation is introduced in the form of delicately tinted threads dyed on the thick counts and indicated by B1 in the pattern. These threads are four in number and are delicately graded from dark to light pink being placed in a vertical position in the cloth, appearing on the face for two courses and going to the back for the next couple of courses, thus giving the interesting intermittent effect shown. The portion of stripe formed at the portion marked *B* is secured by a simple side to side motion of the guide bar.

Pattern 7 shows a general effect of much the same character as Pattern 6 with the addition of a stripe effect from a two-fold mercerized cotton yarn marked *C*. The thick, single threads work as in the last pattern under two and over two courses in a vertical direction and the two yarns raise themselves to the surface in the form of soft flakes of material. The bulging of these yarns rise to a very interesting effect in light and shade, the hollow portions being overcast with a shadow from the higher portions. These soft wide flakes of material are alternated with a single stripe of delicate colored mercerized cotton thread of stout two-fold character and both the soft yarns and the mercerized cotton

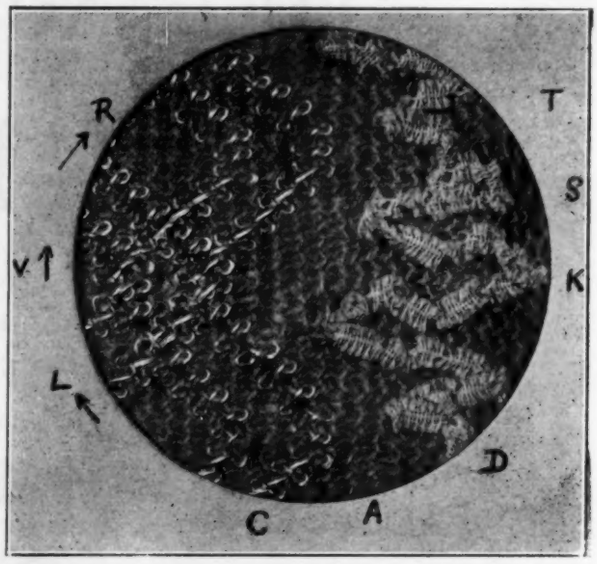


PATTERN 7. LIGHT AND SHADE EFFECT FROM THE USE OF EXTRA THICK FIGURING YARN, ALSO WITH A MERCERIZED COTTON STRIPE.

elements are placed on the usual groundwork of finer worsted thread worked in the plain one and one lap of the Denbigh stitch. In the fabric the ground threads show a setting of about 12 threads per inch, the thick soft threads are about two per inch, to one of the mercerized cotton thread.

Pattern 8 gives another variety of design where the two ornamental features are the thick chenille thread shown at *D* and the small but lustrous white threads of artificial silk thread made from wood pulp and marked at *C*. The ground is similar to the other patterns and the raised effect is produced by the thick chenille yarn which is of a pale blue shade thereby enabling the designer to secure an extremely effective result from little material combined with a simple movement of the guide bar. The artificial silk embellishment shown at *C* is white and shows a brilliant reflection of light which considerably enhances the general elegance of the pattern.

The direction of the lap for the artificial silk yarns is shown by the arrows on the left, *L* indicating a movement of 4 positions towards the left, which are succeeded by 4 positions in a vertical position indicated by *V*, this being again followed by a reversal of the movement towards the right for 4 positions. Along with this general side-to-side motion the silk threads at each position perform an alternate right and left movement which produces an artistic zig-zagged effect which forms small figures after the char-



PATETRN 8. AN EFFECT PRODUCED BY CHENILLE AND ARTIFICIAL SILK.

acter of the figure 8. The chenille feature shown at *D* is pale blue in color and the thread itself has as a basis 6 fine cotton threads on which the more lustrous mercerized materials has been interwoven in the one and one plain weave. The zig-zag nature of the pattern can be readily traced by following the movement of the chenille thread over the surface of the fabric. The extent of the laps is indicated at *K S* and *T*, at *K* there is a lap to the right of about 12 needles performed in two stages, at *S* the extent of the lap has been reduced to about 8 needles whilst at *T* there is a further reduction to about 3 needles in width. This variation in the extent of the lap at successive stages gives a most effective sinuous appearance to the fabric. This combination of artificial silk and chenille, stamps the whole texture as one of particular elegance and it is certain to meet with a ready sale.

SOME FURTHER DESIGNS.

The reader may experience difficulty in tracing the actual fabric structure from the patterns given which rather represent a general impression. From a description of these samples it has been learned that next to the character of the yarns employed and their colors, the lap of the guide bar is the chief factor in patterning. Figure 9 has been prepared by the writer to assist in a clearer comprehension of the actual stitch formation in all fabrics of this character,

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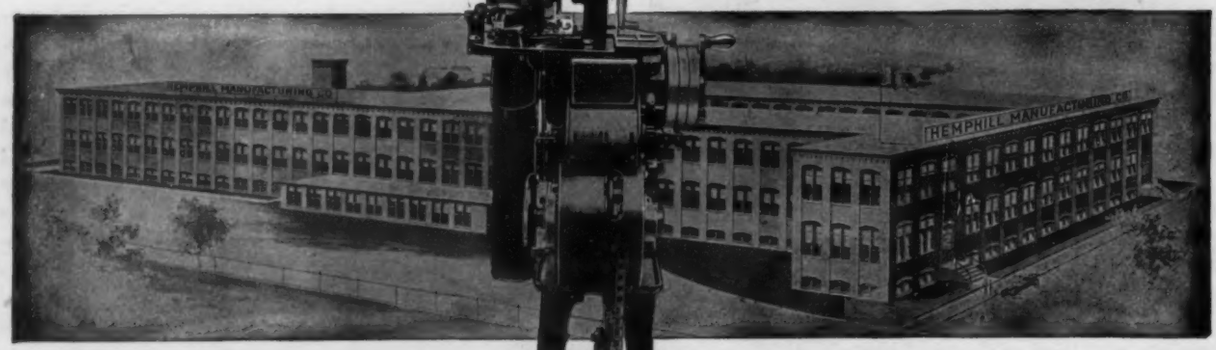

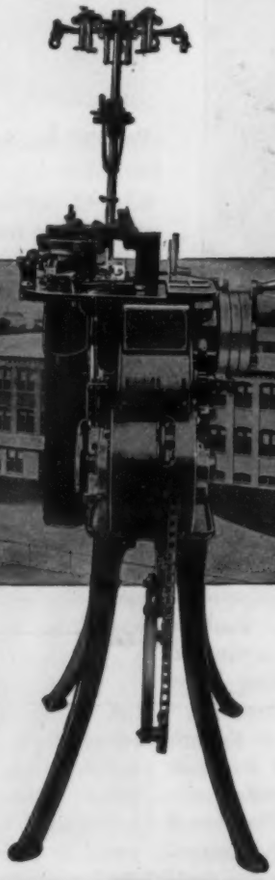

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the sketch being prepared on the special kind of looped paper previously mentioned. The intersection of the loops certainly presents a confused aspect at first view, but if the following directions are complied with, the scheme will be readily enough understood.

Take as a starting point the loop of the extreme left hand bottom corner marked 1 and drawn in deep black. If the thread forming this loop be followed in its movements in succeeding courses, it will be noted that in the second course it has moved one needle to the right marked 2, on the third course a further needle to the right marked 3 and likewise on the fourth course another stage to the right as noted by the figure 4. At the foot of the stitch or course 4 it will be evident that the direction is exactly reversed, the thread turning up abruptly to the left and working on the needle as marked at 5. For the 6th course a further advance to the left takes place as indicated by the figure 6. On the following course the bar moves still farther to the left and finds itself again at the starting point of its lap as marked by 1, where the sidewise movement to the right is repeated as already described. The pattern is contained by 4 laps of one needle each to the right and three laps back again to the left one needle at once till the starting point is reached, there being 7 stages in the complete repeat of the pattern.

If the course of these loops be carefully followed, it will give the key to the structure of the whole fabric, for in this pattern only one guide bar is used and all the points

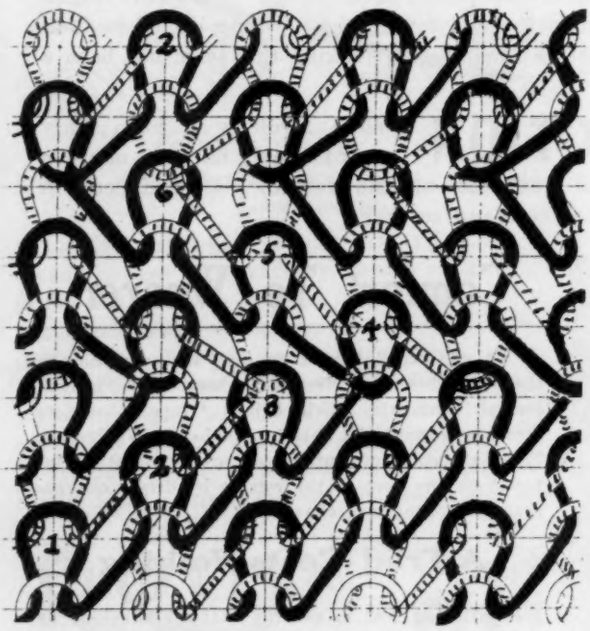
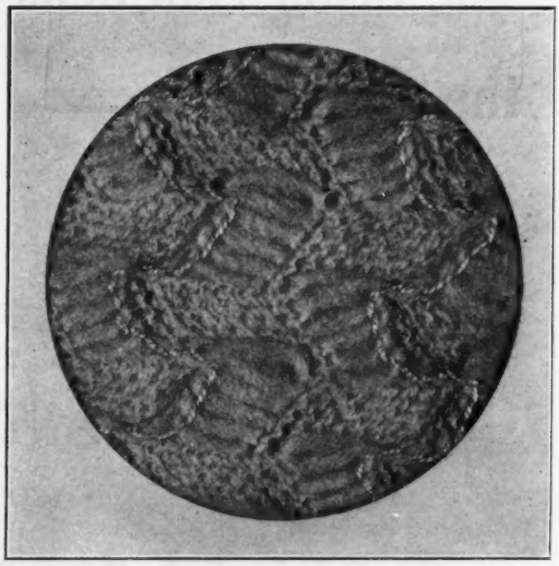


FIGURE 9. LOOP FORMATION OF THE FABRIC SHOWN IN PATTERN 9. COLOR EFFECT 1 BLACK, 1 GREY.

are filled with threads which are given an identical movement to the right and then to the left. As regards color, the threads of this fabric have been colored, one black and one shaded, but all have exactly the same kind of movement. An examination of the way in which these two colors mix with each other in the texture will also give some idea of the color effects possible with this class of product, there being a perfect melange.

The designs previously described have all had as their ground lap the plain one and one Denbigh stitch which indeed forms an excellent ground if the other features are to be made the chief patterning agents. The grounds however are often varied so as to receive a successive series of laps in one direction and then back again to the starting point this giving a general zig-zag effect in the direction of the length. Pattern 9 serves as an example of this type of texture in the ground where the sidewise laps are five to the right and five back to the left again. The wavy effect in the pattern is obtained by the use of the thick single yarn as before, which is seen to float over about 6 loops in the width before intersecting and returning; in its zig-zag arrangement it is seen to follow the same lines as those of



PATTERN 9. EFFECT OF LONG FLOATS OF THICK YARN.

the ground. The waves of soft thread form shades at the edges which are surmounted by the addition of a thick mercerized cotton thread, delicate in shade, which further enhances the appearance of the fabric.

Sometimes the designer requires only to outline on paper the pattern of the chief feature, as in the case of the woven product, where it is not necessary to insert the weave of the ground over all the design. Thus in warp loom designs it is sufficient to know that the ground is one and one or a single lap and the only other matter of importance is the scheme of lapping of the patterning yarns. The method of doing this may be seen from an examination of the lap stretched in Figure 10 where the ground loops are left empty, its being understood that a single scheme of intersection is followed. The needles are marked from right to left 1 to 5 and the successive points at which the pattern guide bar dips its threads into the course are shown alphabetically *A*, *B*, *C*, and *D*. At the first course the thick yarn is seen over needle 1 at *A* and at the second course the bar has moved two needle spaces to the left and forms its loop at *B*. On the third course the pattern bar makes a similar movement over two needles to the left and forms its stitch on needle 5. This proves the turning point of the effect for at the 4th course the bar shows a further lap, two needles spaces to the right when it forms its loop on the third needle at *D*. At the fifth course needle 1 is reached when the bar reverses its direction and moves back again to the left to form its loop on needle 3 as shown at B, thus operating the movement already outlined in detail.

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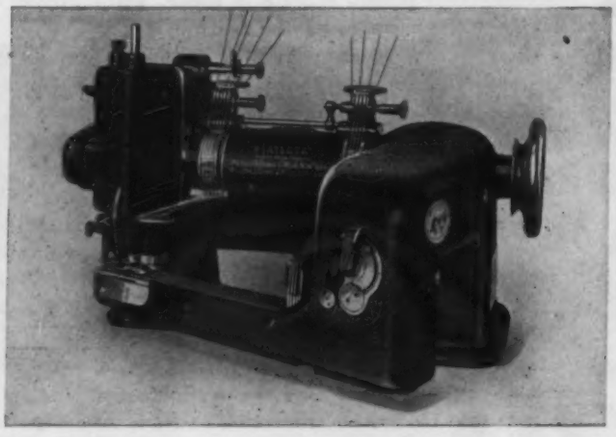
While formerly a seam, only **approximately** flat, was made in TWO operations, today, an absolutely flat seam **(as thin as the fabric)** is produced in ONE operation. This, of course, is an economy to the manufacturer.



Comfort To Wearer

An additional benefit to him, however, lies in the comfort and service to the **wearer** of Flatlock seamed garments. This brings "repeat" orders direct or through the Retailer, Jobber or Wholesaler. To our mutual advantage we are stimulating interest on the part of the wearer by direct canvass through appropriate channels.

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Trade Mark

Reg. U. S. Pat. Off.

This type of lap is suitable for the thick yarns and of this examples have already been given. Naturally owing to the weight of such thick yarns, they need only be employed sparingly in the fabric two or three threads at the one point of the design being quite sufficient to lend distinction and charm to the texture. Pattern 11 is a good illustration of this alternate, swinging of the guide bars from

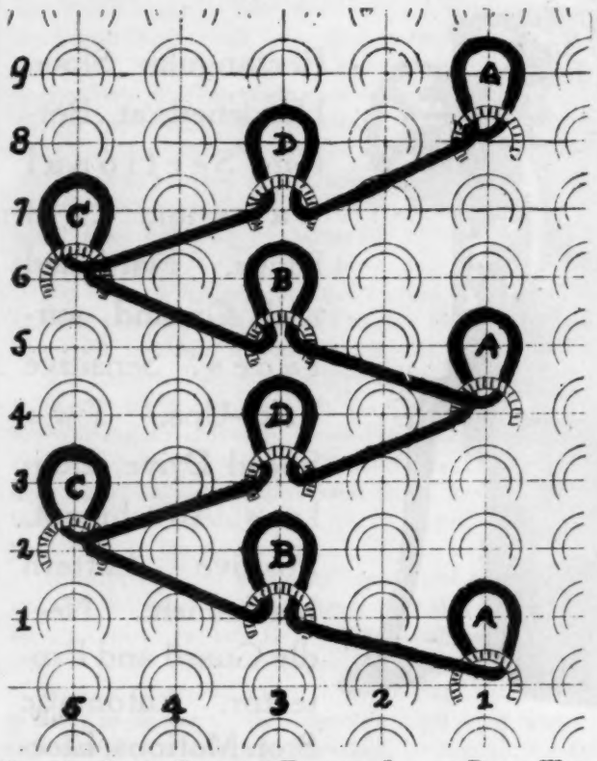


FIG. 10. SHORT DISTANCE FIGURING LAP ON PLAIN WARP LOOM GROUND.

left to right on the lines just described in Fig. 10. The bold feature marked *B* is made by threads of small diameter placed side by side in the guide bar to which is given an alternate side-to-side motion over several needles at once. This produces an effect with serrated edge which is very effectively set off by the border lines of white mercerized cotton yarns. *C* is a vertical line of color produced by a kind of embroidery over and above the ground fabric.

Figure 12 gives a view of a much longer float taken by the fancy yarns in the lap and incidentally shows the

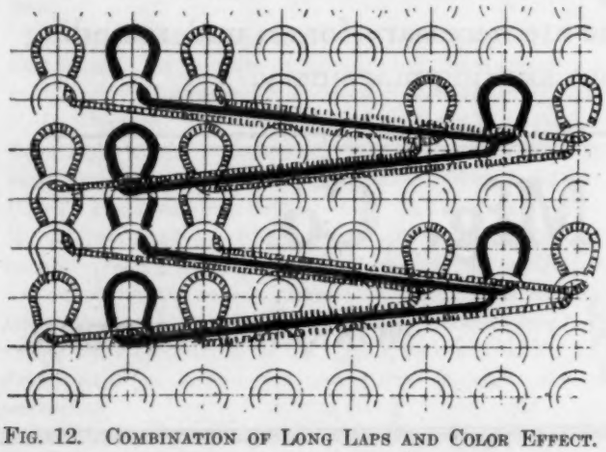
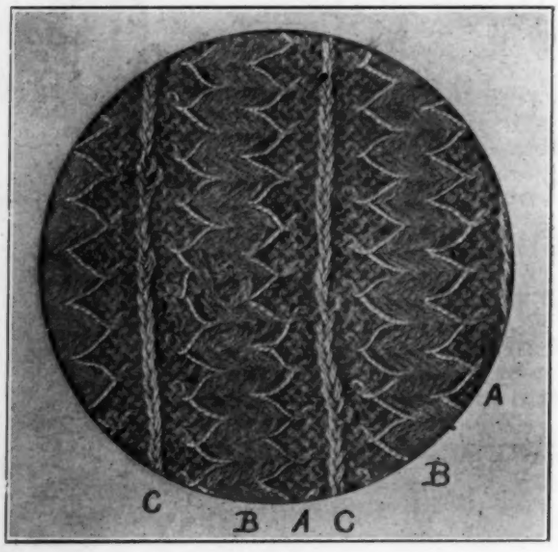


FIG. 12. COMBINATION OF LONG LAPS AND COLOR EFFECT.

scope which color can play in this style of ornamentation. The figuring feature in this pattern is given by three threads shaded one of grey, one of black and one of grey, this arrangement being repeated at regular intervals right across the width of the fabric. The extent of the lap crosswise is 6 needles and the traverse is made at each course so that by this means an enormous increase of material can be placed on the fabric at one point so as almost to obscure the ground texture. This sketch shows possibilities of variation in many directions; the angle of the effect may be altered by making the figuring yarn dip after every second or third course and the extent of the sweep may also be changed in the direction of the width so that we have a short lap and a longer one alternately. Then variation may be introduced by altering the number of threads in the figuring set of



PATTERN 11.

yarns. With this alteration in number, we must, however, bear carefully in mind the size of yarn employed, as there is a limit to what any particular fabric will bear in respect to ornamentation. If the weight be too great, the pattern will appear overloaded and top heavy, and an increase in the number of yarns will require to be accompanied by a decrease in their weight and bulk.

A certain relation between some of these designs and the gauze fabric of the weaving branch may be observed in that certain threads change their position in the texture. In weaving, the threads of warp retain their position in relation to each other throughout the cloth, but in the gauze texture a special attachment enables certain threads to change from one point of the fabric to another. In the warp loom product this can be done with the utmost freedom and without the dislocation of parts necessary for the woven texture.

"The Uncolored Story of American Dyes" is the title of a booklet recently sent out by the National Aniline & Chemical Co., Inc., 21 Burling Slip, New York City. It is a reprint of an article by John Walker Harrington in the Evening Post Magazine for May 1918. A copy may no doubt be secured on request.

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The Knit Goods Market.

Knit goods are between hay and grass so far as market conditions are concerned: have been for several weeks and probably will be for more weeks.

There is brisk trading in some lines of hosiery and in men's underwear, notably the latter, of which there was not a great deal to sell for civilian purposes. A few mills are selling for next Spring, but mainly to regular customers only. They would have obtained higher prices by waiting, but as one manufacturer reasons, the mill had low price yarn and gave the customer the benefit. Anything above what the mill receives on these sales would have gone largely into excess profits, so that from the standpoint of actual profit after deducting for taxes, the mill would not have benefited greatly by a higher price, and the customer is left to do as he pleases with the advantage which was given him. If he follows the policy of the last few years the customer will not share in this advantage.

The underwear situation is becoming more favorable for the distributor. Some weeks ago the Knit Goods Section of the War Industries Board requested that manufacturers refrain from showing samples of underwear for next summer. Recent advices fom the same source are to the effect that mills now will be safe in selling 50 per cent of their production to the civilian trade.

Much of the light weight underwear sold for next year was sold with the distinct understanding that deliveries be accepted before January 1. While financially strong houses assented to this, some distributors declined to buy, especially of women's underwear, in which the shortage has not been so acute as in men's. Considerable quantities of women's undergarments remain to be purchased for next spring, and at this range it would appear that buyers who balked at 1918 delivery will have to pay well for their waiting, for prices must be higher.

There has been semi-official complaint that cotton underwear, more particularly men's heavy weight union suits, was being sold by mills at "outrageously high" prices, and that unless manufacturers pursued a different policy it was likely a government price fixing committee would step in and name maximum prices on given types. It was the idea of a person in an official capacity referring to this complaint, that the Knit Goods War Service Committee name a sub-committee to fix prices that the government might confirm.

T. H. Johnston, of the Knoxville (Tenn.) Knitting Mills Company, in his capacity of president of the National Association of Hosiery and Underwear Manufacturers, and F. L. Chipman, New York, president of the War Service Committee, recently have been conferring with government representatives on the subject of the War Industries Board's proposed price fixing policy. In these conferences Mr. Johnston and Mr. Chipman strongly urged the importance of placing the knit goods industry in the preference list and having it remain there. Mr. Chipman is in constant touch with persons in authority on these matters, devoting much of his time to the matter, in behalf of the industry at large, bringing to bear all the pressure of the association.

It is generally understood that the fixing of prices of knit goods will not be taken up by government authorities until after it has been established as to how far-reaching may be the effect of the regulation of cotton yarns. It is strongly intimated that hosiery first will be considered. Meanwhile, it is urged by persons prominent in the trade that manufacturers refrain from operating far ahead, that they restrict sales to the shortest possible period, and necessarily do not think of naming prices for spring until there shall have been recovery from present unsettled conditions.

It is the prevailing belief that even with government regulation prices of knitted articles must be moved well up. Dyes are advancing week by week, overhead is increasing by reason of diminished production, help is fast disappearing from mills and, viewed from whatever angle, the situation is one that cannot be improved for some time, from the price standpoint in particular.

A very nice point on the subject of price regulation for underwear is raised by a manufacturer, who makes it clear that in any attempt to fix prices the matter should be viewed from the angle of mill location. For illustration, this manufacturer says, the cost of manufacturing union suits varies greatly with the section of country in which the garments are produced, as for instance, the Mohawk Valley district of New York, the Middle West and the South. What might be a fair price for a manufacturer in either section would perhaps be unfair to the producer in another. Unless provision were made for a differential, as in the price of wheat for meeting carrying charges, it appears, the price fixing committee would have before it a task in the disposition of which the best practical thought on the subject ought to be invited.

Government regulation of prices of hosiery, underwear and other knitted articles is going to prove a more complex proposition than was the placing of a maximum price on wheat. Labor of course is the chief factor in the high prices of mill output—not the labor alone that is employed in the knitting factory. The help in the machine factory and in the dye factory must be reckoned with.

A leading producer of aniline dyes, accounting for the advance of 20 cents a pound for direct black—to 95 cents—says raw materials are higher, labor is costing more and freight rates have increased, all of which is an old story to every employer in textile lines. Methylene blues and methyl violet have undergone an advance, as have wool colors. Thus far colors used chiefly on cottons have escaped the radical rise, but it is almost due.

In almost every section of the country, according to trustworthy advices, knitting mills are on the verge of a shutdown because of insufficient help. In one instance, near Philadelphia, a hosiery mill can operate but 22½ per cent of its machinery. In sections where it was generally supposed labor conditions were not so serious mills are only dragging along, wanting knitters, loopers and toppers. In a number of cases mills are shipping hosiery five hundred and more miles by express to have them looped and finished, and have difficulty in finding establishments prepared to do the work.

So long as this condition exists operating costs must be abnormally high and prices of the finished article will move

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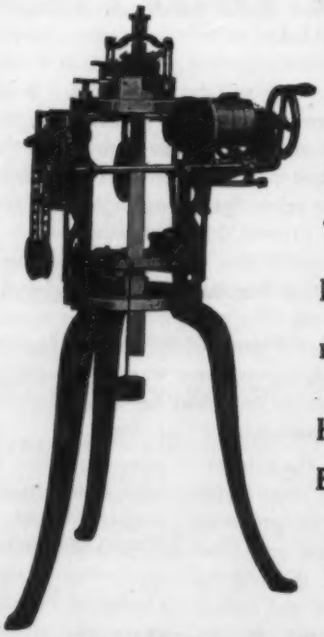

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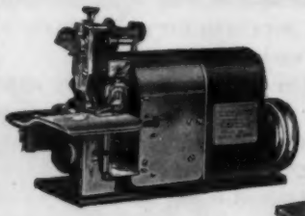

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up in proportion. The situation will be made worse with any curtailment in supplies of fuel in the event that help becomes more plentiful, which does not seem probable. Until the government finds a way of regulating labor it is going to be quite a task to establish prices for the product of labor. In any event, price-fixing for knit goods probably will not be undertaken for some time after there has been experience with price-fixing cotton yarns.

Pending action by the price fixing committee of the War Industries Board, values are steadily increasing. A Pennsylvania mill a week or two ago advanced 176 needle half hose of double carded 14s to $1.75, after declining business at $1.65, the previous price.

A manufacturer of 300 needle combed peeler misses ribs is holding for $3.25, and doubtless will get it, and more, for all ribs continue scarce. Coarse lines which sold normally at and around 67½ cents are worth in the market today $2.25.

A southern mill recently sold ladies' 240 needle combed peeler 30s at $2.40, which is less by ten cents than at least one northern mill would quote.

Mercerized half hose, 220 needle, have been moved up to $3.50 which is only 25 cents under a popular mill-to-jobber price of seamless 220 needle for ladies. Mock fashion seamless have been sold as high as $4.25 by a Pennsylvania mill, which intimates a jump of twenty-five cents. This mill pays the full union schedule and passes the cost along.

Quotations at this time are practically worthless. Almost any price is obtainable from a merchant who must have the goods. On the other hand, the goods in stock and the needy merchant absent will not command more than sufficient to cover costs.

A line that is not in urgent demand is woman's and men's low end hosiery. Of cotton half hose there possibly is enough to meet present requirements. The rapidity with which the automatic top sock can be turned out has brought about an increase in supplies that was unlooked for several months ago. But with continued scarcity of loopers and toppers the automatic top sock should find a ready market at better than present prices.

This is not a time for yielding to alarm. All knitted goods promise to become scarce. It is understood the government will want more socks, and that it is purposed to have knitted considerable quantities of three-thread carded peeler. This turn over to cotton is intended to conserve wool. The socks are to be put in reserve stocks for the army. It was announced several weeks ago that no additional contracts for army half hose would be placed until after the price of cotton yarn had been fixed. With this reason for delay out of the way it is assumed buying will be resumed.

There is a puzzling situation in infants' fancy top socks. Mills which a few weeks ago opened for spring withdrew prices after selling for less than a week, and no one other than seller and buyer seems to know the prices that were obtained. There was some curiosity as to what would be the market effect of several new mills suddenly coming out with samples. As they too retired after a short session of selling, it is felt that old and new were about on the same level. Infants' socks have been very scarce, but in the trade there are persons who believe or affect to believe that scarcity is a matter of the past.

An infants' cotton sock made in Japan is being shown, quoted at $1.10. Shipments of the Japanese socks have made their way into South America, according to a buyer for a large house in Buenos Aires who recently was in the Philadelphia and New York markets for merchandise.

Several hosiery manufacturers are urging jobbers to accept paper packing in lieu of the strawboard boxing, which, it is intimated in near-official circles, will have to go under the ban, for conserving the fuel consumed in making strawboard and space in transportation. It is the general impression that mill and jobber might as well prepare now for substituting paper for boxing.

At the July meeting of the executive board of the National Association of Hosiery and Underwear Manufacturers, at which T. H. Johnston, Knoxville Knitting Mills Company, presided, recommendations were adopted to the effect that silk hosiery be packed in boxes of not less than half dozens, cotton hosiery and light weight underwear in boxes of not less than dozens and heavy-weight underwear in not less than half dozens.

While no action was taken by the meeting on selling terms, a canvass of those present showed a predominating sentiment in favor of maximum terms of 30 days net, one off 10. Several of the manufacturers in the group already are selling 10 days net, and it was the understanding that cotton yarn spinners were heading in that direction.

Probably the most perplexed division of the knitting industry is that devoted to the manufacture of wool and worsted sweaters. These manufacturers have been told by persons who ought to know that no wool will be available for sweaters. There is a lurking fear that silk will be declared unessential. Then there is the doubt about getting on the preferential list as to fuel. As in all other textile factories, help is deplorably scarce, and even scarcer are the types of needles required for sweater knitting. A committee of manufacturers which recently pleaded with the War Industries Board for preference feels encouraged over the outcome of the conference, but still the clouds hang low.

A New Directory.

The Official American Textile Directory, edition of 1918, is ready for distribution. This directory is published by The Bragdon, Lord & Nagle Co., who announce that it contains about 700 mills which were not in the 1917 edition, and that there were over 200 mills reported last year which are now out of business. There are about 4,000 mills which have made changes in their reports. The mill reports are grouped alphabetically under the cities and states in which they are located. In addition, there is a classified list of mills arranged according to their products, lists of selling agents, dealers in raw materials, export houses, and other auxiliary lines having to do with the textile mill trade. It is illustrated by nineteen textile maps.

This book is published in three editions, viz: the standard edition, $3.00; office edition, $4.00; vest pocket edition, $1.00 per section. They may be secured from the publishers or through COTTON.

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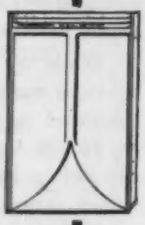

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Pennsylvania Knitters Hear the Psychological Side of Success in Business.

Knitting Manufacturers to the number of almost 100 assembled at the Iris Club in Wyomissing, Pa., for the July meeting of the Pennsylvania division of the organized industry, and besides listening to an address by Dr. Silas S. Neff, Philadelphia, on the psychological phase of the success in business, heard from practical men in the manufacture and distribution of knit goods.

The meeting marked an innovation in the fraternization of knitting manufacturers in Pennsylvania, in that the Berkshire Knitting Mills, full fashion hosiery, threw the big plant open for inspection by all of the visitors, who were shown through all of the various departments in four groups, each in charge of a person in an executive capacity. So far as known, the Berkshire is the first of the full fashion mills to accord this privilege to its competitors in a body.

It was a day of hospitality, in extending which the Berkshire was host, providing automobiles in which the visitors were taken for a tour of Reading's scenic environment and were given a birdseye view of the city from the pagoda on the lofty eminence to the North.

At the conclusion of the day's entertainment and business session it was felt that the occasion heralded the dawn of closer relations among the knitting interests of the Keystone State, and committees were appointed to arrange for meetings in August and September.

One of the guests was J. H. Schofield, Sullivan & Co., Philadelphia, jobbers in hosiery and underwear, who is president of the Jobbers' Association of Knit Goods Buyers. Mr. Schofield brought a message from the Conservation Division of the War Industries Board, with which he had been in conference, putting a changed aspect on the matter of packing.

Some time ago, Mr. Schofield said, the Conservation authorities called for the elimination of strawboard boxes and the substitution of paper. Now, he continued, it is found that paper in sufficient quantity for carrying out this idea may not be available, while the box makers have the boxes.

But, Mr. Schofield said, it is important that you condense packing so far as possible. Use smaller boxes so far as contents will permit, and pack into each box all that you can. "Show me the smallest boxes you can use," he promised, "and I will carry them to Washington and show the Conservation Board that manufacturer and distributor are united for conserving space in transportation and reducing materials used in packing."

Mr. Schofield's address, which was a specimen of conservation of time, chiefly because he had to hurry away to keep another engagement, was well received by the manufacturers, among whom it was the impression that mill and jobber are getting closer together through their respective organizations for the welfare of both interests. But his prediction that prices of cotton yarns would be based on cotton at 34 cents a pound was the getting "over there" in his remarks.

Charles E. Leippe, Reading Knitting Mills, presiding at the business session, urged extreme caution in every transaction from now on. "Don't spread," he said; "keep close to shore. Do business on the assumption that the financing of business is going to be a serious problem from now until January 1st. It will require large sums of money. We must try to have it available for any emergency, and many are likely to arise. It will not do for us to menace our future by reaching too far for the present."

Another drive for ten days net selling was made. Mills which feel that they cannot exact such terms at this time—notwithstanding a number are—were enjoined to accept no business on terms more liberal than 30 days net or one per cent 10 days.

"We are rapidly heading toward 10 days," thought S. D. Bousher, Glorie Underwear Mill, presiding at the luncheon, who said it need not be surprising if spinners introduce 10 days net selling as their new terms, shipment f. o. b. mill station.

Some of the suggestions of Dr. Neff for the better conduct of business were:

Remain young, and to stay young, don't retire until you are kicked out.

Mingle with men. A really good business man is a good mixer.

Broaden your intellect. If there are some things you like better than others, try doing those things which you like least. This will enable you to get out of your ruts.

Take care of your health and be happy. Unhappiness kills as many persons as any element in our modern life. The man who is unhappy 8 hours out of every 24 in his home cannot be a complete success for 8 hours in business.

Dr. Neff is strong on cooperation. He thought there were more really practical men in business than in the professions. He ascribed this to the many complexities in a business man's life, which tend to broaden him.

Under the law of cooperation, Dr. Neff said, there is less of isolated business, a departure from the policy of each for self, except on the part of a few who are not sufficiently broad-minded to appreciate the practicability of that principle by which business is being doubled and doubled again. Most of the failures in business, he said, are due to the inability to grasp more than a very few sides of a problem.

It has been held by psychologists, Dr. Neff continued, that but a comparatively few persons think. They believe they are thinking when they are reading, talking or listening. We often hear persons criticised because they are imaginative, the speaker stated. Be as imaginative as you please, he suggested, but don't let your imagination run away with you. Visionary persons often accomplish great things, he said. Every important invention was born of a vision of some sort.

Hosiery, sweater and underwear interests were represented at the meeting, and so enthusiastic were those present that by unanimous vote it was decided to meet in August at Mineral Springs Park, Reading, and at Galen Hall, Warnersville, in September, on the second Saturday of the month respectively. Charles E. Leippe is chairman of the committee of arrangements for the August meeting and S. D. Bausher for the September gathering.

They also serve who buy War Savings Stamps—if they save and buy to the utmost of their ability, and buy in time.

Pledge yourself to save to the utmost and to buy a definite amount of War Savings Stamps each month.

Among the Knitting Mills.

The entire plant of the Suffolk Mills at Suffolk, Va., with the machinery and stock in hand has been sold to the Bell Hosiery Co.

The Magnet Knitting Mills at Clinton, Tenn., have awarded a contract to A. J. Stair Construction Co., for the erection of the building for their recently announced branch plant at Coal Creek, Tenn. This building will be equipped with 150 knitters driven by electric power.

The Defiance Sock Mills at Charlotte, N. C., are completing the dyehouse which was recently built as an addition to the plant. This will enable the company to do its own dyeing hereafter.

The P. H. Hanes Knitting Co. at Winston-Salem, N. C., has arranged to sell their products direct to the jobbing trade beginning November 1st, 1918. The company has opened offices at 366 Broadway, New York City which will be in charge of C. W. Goodwin. He will be assisted by Lewis Smith, formerly of Clift and Goodrich. This company has been expanding rapidly during the past few years and it is no surprise to its friends to see it branching out in other directions.

The Kincaid Knitting Mills at Griffin, Ga., which just began construction of their new mill a few months ago have now completed this building and started operation. The dyehouse and finishing plant are under construction and will be ready to begin operation in the near future.

The Griffin (Ga.) Hosiery Mils are building a large addition to this mill. These mills manufacture a very high grade of mercerized ladies' hose and have been very successful since they first began business.

The plant of the Dalton Hosiery Mills at Dalton, Ga., is being moved into the new building that has recently been erected for it. This building is of brick and concrete construction and is entirely fire proof. Much new machinery is being added and this is being installed as fast as it comes in.

The new Acworth (Ga.) Hosiery Mill began its operation on July 20th and the first pair of hose turned out, ladies' silk lisle, was auctioned off in the streets of Acworth and brought the sum of $100, the proceeds of the sale going to the local Red Cross. This is the mill in which W. F. Hetrick of Gainesville, Ga., has financial interest.

The Orinoka Mills, Ruth and Somerset Streets, Philadelphia, are planning for the immediate construction of a new brick and reinforced-concrete factory addition to their plant, to provide for increased capacity. Plans for the structure have been prepared by William Steele & Sons Company, Inc., Sixteenth Street.

The Swansdown Knitting Company, Hudson, N. Y., has recently filed notice of an increase in its capitalization from $150,000 to $750,000, to provide for expansion.

The Cooper Underwear Company, Manistee, Mich., is planning for immediate work on the construction of a new two-story and basement plant, about 100 x 125 feet. The structure is estimated to cost about $60,000. Bids for erection have been taken.

The Oliver Knitting Company, Fifth Street and Lehigh Avenue, Philadelphia, Pa., manufacturer of hosiery, is planning for the establishment of a new branch mill, and has leased space in the factory building at 215 West Dauphin Street for this purpose.

The M. W. Brooks Knitting Company, Oswego, N. Y., with plant at 16 East Cayuga Street, manufacturer of knit goods, has filed notice of an increase in its capitalization from $15,000 to $50,000, to provide for business extensions.

The Hosiery Specialty Company, Buffalo, N. Y., has filed articles of incorporation with a capital of $10,000 to operate a plant for the manufacture of hosiery. S. Reichler, and J. I. Alpern, Syracuse, are the principal incorporators.

Plans have been filed by the North American Lace Company, Eighth and Allegheny Streets, Philadelphia, Pa., for alterations and improvements in its plant and office building at Eighth Street and Glenwood Avenue. Contract for the work, which will cost about $4,000, has been awarded to the William Steel & Sons Company, Philadelphia.

The Standard Underwear Company, 3 East Twenty-eighth Street, New York, has filed notice of an increase in its capital from $15,000 to $50,000, to provide for expansion.

The Chipman Knitting Mills, Easton, Pa., manufacturers of hosiery and knit goods, has had plans prepared for the erection of a new plant consisting of two factory buildings, one-story, about 45 x 110 feet, and two-story, about 60 x 146 feet, respectively. The new works are estimated to cost in the neighborhood of $50,000. William Michler, Drake Building, Easton, is architect.

The William Brown Company, Kensington Avenue and Ontario Street, Philadelphia, Pa., manufacturer of hosiery, etc., has purchased the plant occupied by the company since 1909.

Contract has been awarded by the Coaldale Hosiery Company, Coaldale, Pa., for the construction of the proposed new three-story brick, steel and reinforced-concrete plant, about 50 x 100 feet, to cost $26,000.

The Warwick Knitting Mills, Brooklyn, N. Y., have been incorporated with a capital of $100,000 to operate a plant for the manufacture of knit goods. M. Greenberg, D. Bodenstein, and H. Goldmer, 1788 St. Johns Place, Brooklyn, are the incorporators.

Articles of incorporation have been filed by the Bath Knitting Corporation, Utica, N. Y., with a capital of $50,000, to engage in the manufacture of knit goods. J. P. Liddy, C. R. Dewey, and R. W. Jones, 255 Fourth Avenue, are the incorporators.

The Grand Rapids Underwear Company, Grand Rapids, Mich., is considering plans for the construction of a new three-story addition to its plant to provide for increased capacity. The structure is estimated to cost about $35,000.

The Utica Steam & Mohawk Valley Cotton Mills, 801 State Street, Utica, N. Y., has commenced the construction of a new one-story power plant extension to its works, about 25 x 45 feet. The structure will cost $15,000.

The Reliable Knitting Works, Milwaukee, Wis., manufacturers of fancy knit goods, has recently filed notice of an increase in its capitalization from $50,000 to $100,000, to provide for business extensions. The company is said to be considering plans for the erection of new additions to its plant to increase the present capacity.

William Clow & Son, Laconia, N. H., manufacturers of knit goods, are making rapid progress in the erection of a new one-story and four story addition to its plant, about 30 x 35 feet and 40 x 50 feet, respectively, to cost about $15,000.

The S. S. Miller Knitting Company, Reading, Pa., is planning for the establishment of a branch knitting mill at Fredericksburg, Pa., to be located in the Cyrus Miller Building.